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CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

OFFICIAL NOTICE—
Experience Section, Pacific Coast Gas Association..... 289

EDITORIALS—
Briefly Told..... 289
Annual Picnic of the Mueller Manufacturing Company's Employees—Current Mention.
Recent Patent Issues..... 290
Proceedings, Sixth Annual Meeting, Iowa District Gas Association—Continued from page 248..... 291
First Day, Morning Session—Discussing the Paper on The Gas Company's Attitude Toward the Public—First Day, Afternoon Session—Address of Mr. Dawes—Discussing the Paper on Boiler Fuel Leaks—Report of Committee on President's Address.
*When the Nuts Work Loose, by "R."..... 299
The Relationship of Decoration to Illuminating Engineering Practice, by Mr. C. R. Clifford..... 299
The Education of Lighting Company Employees..... 300
*Modern Gas Producers, by Herr J. Hofman..... 301
*The Swartwout Automatic Safety Valve..... 302
Street Lighting an Advertising Agent, by Mr. Wm. F. Weadley..... 303
ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 303
The Nebraska City (Neb.) Gas Franchise—Going Ahead at Anderson, Ind.—A Leak, an Explosion, a Suit—The Proposed Plant, Billings, Mont.—Personal—Proposing Gas for Mansfield, Mass.—Betterments at Defiance, O.—Personal—The Reorganization at Freeport, Ills.—Mr. Slimpin is on the Job—Sale of the Columbia (Pa.) Plant—Gas Enters Not into the Increase in Cost of Living—Will Merrimac (Mass.) Have Gas—Proposed Company for Shelbyville, Ills.—Manager Waring is Busy—Again, Loomis—Contract for the Gas Machinery Company—An Upright Set for Springfield, Mass.—The Marlboro (Mass.) Company may Make Capital Increase—Personals—And Other Items.
The Market for Gas Securities..... 305
Meeting Times of the Various Gas Associations..... 315
Public Lighting Tables for August, 1910..... 318

[OFFICIAL NOTICE.]

Experience Section, Pacific Coast Gas Association.

OFFICE OF THE EXPERIENCE EDITOR,
ROOM 610, 445 SUTTER STREET.
SAN FRANCISCO, CAL., June 26, 1910.

To the Members of the Pacific Coast Gas Association: Someone has said that "Education is not the result of a course of study; it is the result of a course of experience." And the Editor of your Experience Department, whom you honored by that appointment at the last meeting, would like to have you share with him a bit of experience that has helped to make you successful, so that he can tell it to the Association at the Los Angeles meeting, which is so near at hand—September 20, 21 and 22. The name of the sender will be treated confidentially, if so desired.

Faithfully yours,
LEON B. JONES, Editor.

BRIEFLY TOLD.

ANNUAL PICNIC OF THE MUELLER MANUFACTURING COMPANY'S EMPLOYEES.—The annual picnic of that huge and sterling corporation, known as the H. Mueller Mfg. Company, of Decatur, Ills., which was this year held in Miller Park, Bloomington, Ills., the morning, afternoon and evening of the 30th ult., was in every best sense a first water success. A varied programme, which numbered 11 separate events, that were productive of untold amusement and surprise, provided: An athletic diversion, from 1:30 to 2:30 P.M.; a well put together dancing list of 15 numbers; and in the evening a concert (of 8 numbers) by the Mueller factory band, afforded real enjoyment from 7 to 9 P.M. An excellent dinner was served at noon, an excellent supper in the evening, and between times, if anyone was either thirsty or hungry, there was a plenty of material on hand to satisfy all comers. Other features were the "Prelude Parade," from Bloomington's Interurban station to the Park, and in the early afternoon Goodman's Fourth Regiment Band told off in excellent time 13 separate numbers, a trombone solo, by Mr. Gillum, being especially effective. The fat men's race was won by "Charlie" Schlegel, and much sorrow was expressed when it was found that handsome (even if overweight) "Fred." Mueller was not a contestant. The line-up for the parade caused much disappointment, when it was noted that the only member of the family not in line was that prince of good ones—Mr. Oscar Mueller—who was unable to leave New York to be on hand in time to share the pleasures of the day. There were over 2,000 Decaturites present in Bloomington during the outing, and Bloomington surely did revel in the opportunity to call attention to its "wonderful growth"—a fact that was commented on by the rival candidates for sheriff of the county—the election for which is about "on." The day was perfect; the enjoyment of the affair was complete; and not a single unpleasant incident happened to mar in the least the happy occasion. Just prior to dinner a photograph of the assemblage was taken, which perhaps we shall have the privilege of publishing later on.

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CURRENT MENTION.—

MR. J. R. KENNEDY, the active and judicial minded Secretary of the Public Service Commission, Second New York District, under date of the 4th inst., informed all in interest therewith that the gas laboratory of the Commission has been removed from the Power House Building, Albany. Companies and consumers are notified that hereafter all meters, supplies, etc., intended for the gas meter inspection department of the up-State Commission, should be shipped to the following address:

PUBLIC SERVICE COMMISSION, SECOND DISTRICT,
Gas Laboratory,
Lynn Block, Albany, N. Y.

THROUGH the courtesy of Mr. R. G. Clapp, the quick-witted Purchasing Agent of the Brown Hoisting Machinery Company, of Cleveland, O., we are in receipt of a copy of the Company's new descriptive Bulletin, which has the title "Modern Ore and Coal Handling Machinery." And no handsomer compilation of a corresponding nature has been received at this office. Beyond the titling pages, and a short introduction, or prelude, and the footlines giving the location of the structures illustrated, no descriptive text is used, the pictures (39 in number) telling the story; and they tell it well. Notable in the listings are two beautiful photo-gravures of the excellent bridge tramway and main trolley, constructed on the works of the Astoria (L. I.) works of the Consolidated Gas Company, of this city. Also, a graphic reproduction of an 8-ton coal grab bucket, operated in connection with the tramway. The entire publication is one that must delight the visual powers of the engineer, and to those who admire good taste in presswork and the other adjuncts of the printer's art, it affords a veritable treat.

A POSTAL card informs us that the next gas meeting of the Colorado State Section of the National Commercial Gas Association will be held in Colorado Springs, the 26th and 27th insts. It is also averred that an "interesting programme has been prepared and various entertainments arranged for." Which averment would seem completely borne out through this detailed statement to hand the 10th inst., from a correspondent in Denver, via Colorado Springs, the 6th inst.: "The committee in charge of the meeting of the State gas men met here the last week and announced that cut rates have been secured from the various railroads, so that delegates and visitors can make the round trip from their homes to the Springs at small cost. All the mountain lines granted a rate of 1½ fare, while the prairie ones have consented to a 1½ fare. The rates, however, will be in effect only from towns having either gas or electric plants. The Programme Committee had not finished its work at time of writing, but it is surely arranging to give the visitors a chance to enjoy the time of their lives. On the first evening (the 26th) there will in all likelihood be a spread in the Mansions, followed by a dance, if the delegates will permit such frivolity! On the 27th various drives and other entertainment will be provided for the ladies, and at some period of the same day there will be a trip on the Mount Manitou Scenic Railway, followed by an old-time basket picnic, sprinkled with games and punctuated by speeches. It is hoped that Brother Challis, who is back from his Eastern visit, will tell something about what your Mr. Cunningham talked to him about, when the pair were hobnobbing together in the Astor House."

AT a meeting of the shareholders in the Ellis Gas Engine Company, held in Detroit the first week of this month, the following officers were elected: President, M. T. McGraw; Vice-President, Louis Schmied; Treasurer, Hector McLean; Secretary, Emil W. Snyder; General Manager, Louis M. Ellis.

HIS legion of friends will congratulate Mr. Alanson P. Lathrop on his elevation to the Presidency of the Milwaukee (Wis.) Gas Company, which promotion was accorded him by the Directors elected at the annual meeting of the Company some days ago. Faithfully he has served it, and that he may long continue on the upward way is the hearty wish of the JOURNAL. He succeeds Emerson McMillin, who, however, remains with the Company as Chairman of the Board of Directors. The other officers chosen were: Vice-Presidents, Messrs. Sheldon J. Glass and Nelson F. Hulst; Secretary-Treasurer, Mr. Ewald Haase. It is also worthy of note that the Company declared the usual semi-annual dividend or bonus to its employees, which distribution amounts to 10 per cent. of their wage receipt.

"S. W. M.," writing from Palmyra, Pa., under date of the 9th inst., says: "We are going along here in fine shape. Palmyra is piped and a start on the piping at Annville will be made there this week. Then we will go to and through Humelstown. Our building is up, ready for the placing of the machinery. We started on the holder to-day, and we expect to turn on gas before October 1st. To tell the truth we will try to do better than that, for part-way at least. We are to have an 'Old Home Week' here, the week between the 4th and 10th prox., when we are sure to have a great crowd in town. It is planned that the central part of the place will be illuminated by means of gas arcs; an advertisement, don't you know! We now have on our books 152 applications for services, and judging by the way others are coming in we will have well over 200 when the time comes to turn on the gas—remember, this is in Palmyra, alone."

ON June 18th last, the first steps were taken by the draftsmen of this country to form an American Society of Draftsmen, and on July 27th the first meeting was held, a home chosen (116 Nassau street) and the following officers were elected: President, Mr. E. Farrington Chandler—the well-known designer and inventor, and to whom should go the major credit for their organization; Vice-President, Mr. W. B. Barsel; Treas.-Secy., Mr. Henry L. Sloan. Writing of the need for such an organization, Secretary Sloan remarks: "The benefits of an organization of this character are well understood, and need no elaboration. A decided feature of the Society is the opportunity offered juniors, affording means by which they may become familiar with the demands of practice in the drafting room while students or employees in other branches of industrial work, as is also an employment bureau co-operating with employees."

JUST to hand (Friday) is a notification from President Wrightington, National Commercial Gas Association, calling attention to the fact that the annual exhibition (to be held in connection with the annual meeting) is set for December 5th to 13th, both to be brought off in Mechanics' Building, Boston. This building is particularly well adapted for an exhibition of the sort proposed, in fact its adaptability to such use is widely known throughout the country. In his notification President Wrightington remarks, "It is not too early to begin making the arrangements regarding the exhibition, and I, therefore, inclose applications for space, with plan of the Exhibition." It is well and wise that those who intend to exhibit should heed this initial invitation, for those who apply first will certainly be served first. For any matter connected with the proposed display, applicants should address, Mr. B. C. Ware (Chairman, Exhibition Committee), Boston Consolidated Gas Company. New York members of the Committees are: H. B. McLean, Consolidated Gas Company—Mr. McLean is Chairman; H. L. Sterrett, 40 Wall street—all of the Committee on Relations with Manufacturers; also, Messrs. P. F. Reichhelm, 24 John street; E. L. Elliott, 12 West 40th street; Wm. M. Crane, 16 West 32d street; J. P. Conroy, 48 West Broadway.

THAT the Pittsfield (Mass.) Coal Gas Company is going ahead would seem borne out by these facts. The gain in output for the year figured 16.7 per cent.; the increase in meters set was 785—bringing the total to 5,616; 4,032 gas appliances of all sorts are in use, and the main mileage is 33. The candle power averaged 18.3—the requirement is 16. A dividend of 6 per cent. was declared during the year, and in the betterments for the twelvemonth was an additional storage holder. The annual election resulted as follows: President, R. W. Adam; Treasurer, H. A. Dunbar: Superintendent, H. C. Crafts; Directors, E. W. Adam, J. W. Hull, W. G. Backus, W. L. Adam and T. F. Plunkett.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 10 cents.

966,283. Incandescent Gas Mantle and Art of Making Same. A. P. White, Caldwell, N. J.

966,343. Heating Gas Burner. J. and F. Marik, Pittsburgh, Pa.

966,371. Diaphragm Controller for Gas Lighting Purposes. J. M. Tourtel, London, England.

966,379. Lighting and Extinguishing Device for Street Lamps. A. Bedford, Melbourne, Australia.

[Official Report.—Continued from Page 248.]

SIXTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

Held at Sioux City, Iowa—June 15-17, 1910.

Wednesday, June 15.—Morning Session.

The President—We will now listen to the paper by Mr. Campbell W. Fair, of Oskaloosa, on

THE GAS COMPANY'S POLICY TOWARD THE PUBLIC.

[For the text of the Fair paper, see Journal, *ante*, p. 108.]

Discussion.

The President—Before this paper is before you for general discussion, I will call upon those whom our Secretary formally invited to discuss it. The first is Mr. Wm. B. Addy, of Waterloo.

Mr. Addy—When a man has something to say, and is able to pick out the very best way to say it, we all give our attention and are interested. I am sure, therefore, that what Mr. Fair has said has been listened to with the greatest of interest, for he certainly put his subject in a very good way. We are all trying to do what he states there, and if we can once convince the public of that we will have accomplished the object for which we are now working. In asking for discussion on this paper I presume our Secretary meant the offering of suggestions as to ways in which we can make the public feel that we are trying to treat them fairly. I feel that a man from Waterloo is slightly at a disadvantage in suggesting new ways, because we have a class of people there who seem to meet us half-way. Whenever we attempt to show a man that we are trying to treat him fairly, he meets us half-way, so we have very little difficulty in trying to straighten up the trouble. As Mr. Fair said, a company is judged by its employees; and for that reason it seems to me we ought to give special attention to the man we put in charge of our complaint departments. No rigid rules can be laid down, of course, to show of what courtesy to a customer consists; that depends upon the man. A man who has natural tact and feels kindly towards those whom he meets will know how to handle another man. It seems to me, therefore, when we find a man in our complaint department who has not that knack we had better displace him by someone who has the knack of handling the public in a courteous way, or one which will not give offense. Don't tell them there is nothing the matter, for the consumer thinks there is; and the way to handle him is to explain the thing in such a way as not to put him in the position of having made a ridiculous complaint, but of being an intelligent man who makes an inquiry which he expects to have answered courteously. Among the little things which come to mind I would suggest that advertising, of such a nature as will help the town, is a good thing. It is very easy to put in our advertising from time to time something that shows our appreciation of the way the town has treated us, and that will help boost the town. I have always felt that a nice appearing office helped, although I heard of a man a while ago who criticised the gas company because its office was too elegant. I don't suggest that as an argument against making our offices attractive, but rather to show the different ways in which people look at such things. It seems to me our offices should be handled in such way that the people with complaints might feel free to come in for anything they wanted. We have often heard of Congressmen who maintain their position because of their making constant effort to be of the plain people. I read, in the "Saturday Evening Post" the other day, of a man whe went around with high topped boots with one trouser leg pulled up on the boot, so as to give the impression that he was one of the plain people, that was returned to Congress term after term. In closing, all I would say is right in line with the remarks that Mr. Clabaugh made here this morning. What we want is to treat the people with absolute justice to cause them to feel that we intend to treat them as squarely as we want them to treat us.

The President—Mr. Thomas Crawford is not here, but I believe Mr. Clabaugh has a discussion written by Mr. W. E. Davis, which he will please read.

Mr. Clabaugh thereupon read the following contribution to the discussion by Mr. Wm. E. Davis. In a flash of philosophy, it was once said, that "The man who agrees with everybody soon gets the reputation of having good judgment." I have read Mr. Fair's splendid and valuable paper with a great deal of interest and entire approval, agreeing with him thoroughly on the policy he advocates. I admire his discussion of the subject especially for the "enthusiasm" he asserts in his discovery of the ten or eleven "Commandments' required in the policy to be adopted and pursued in a gas company's successful co-operation with the public. This subject itself is one of very special interest to me, and appeals more to my special concern than most any other; in fact, I think it carries the very lifeblood of a gas company's business. A gas company's policy towards the public will form its foundation for success or failure. Our business, including every branch, is a true matter of commercialism, and one of the strong points carried and brought out by Mr. Fair is the selling of "Gas Service." This is one of the first elements of the gas business that was ground into me and given to me as the fundamental principle for the success of our business at large. Now "Good Service" is a very comprehensive term, and implies or includes every arm of the service; or the whole machinery, if you please. Every part of the machinery that comes in direct or indirect contact with the public should be so manipulated that its pressure shall be so equally divided that it will comprehend every requirement of the public, and the efforts should not be concentrated on a certain given spot to the detriment of other requirements of our patrons. A request from a small consumer may be of very great importance to him, and yet in a business way be of very insignificant importance to the company's servant having it in charge, and for him to look after the careful completion of the order would work to his personal detriment, as he is trying to make a record for himself along certain lines, the selling of appliances for instance. And as this little order, to carry out the "Good Service" plan, will require considerable of his time, care and attention, and contribute but little to his credit, his natural tendency is to give his attention to things that will accrue most to his special benefit. As a concrete example, imagine a case to illustrate the point: In an outlying community dwells a very good citizen and patron who has sickness in his home, and in need of a little job of piping to carry gas into the sick room; for heat, for instance. He makes request by "'Phone" to the office of company, the order is received by clerk and a notation made, "Estimate to connect small burner." This order is put into the hands of a solicitor, without comment, who may be somewhat behind along the line especially required of him, and by which alone his value to the company is estimated, consequently this little job, to him, is not worth going after, and he directs his time and efforts on business that will count most for him on his report, even though he may not sell an extra foot of gas or secure the least mite of "Goodwill" for the company he serves, but only contributes to his personal record and that part of the machine with which he is directly connected. Hence, the man with his little requirement is neglected from day to day. This arouses his criticism and that of his friends. With the "Good Service" idea in vogue, this could and should have been made a complaint and commendation for the company. What I am trying to bring out is that the pressure of this important arm of the service, that goes right into the homes of the people, if not properly safeguarded, will, I fear, be brought too much on one side and eventually destroy the equilibrium of the "Good Service" structure. Plant a grove of trees and let the wind blow continually from one direction, the trees submitting to the pressure, all being brought from one side, instead of growing straight and symmetrical will be misshapen and neither a thing of beauty nor service. Therefore, let the company's machinery be so adjusted that every department of the gas business is fraught with "Good Service" ideas so that each and every request or order, I care not how small, will receive alike prompt and careful attention, thereby creating the goodwill or love and affection of the public, which of itself has a great intrinsic value. "Despise not the day of small things;" or the man with his little insignificant order. The Saviour said: "Beware of the foxes; the little foxes that spoil the vine." So beware of the little errors or the little neglects, because the little things are what shape and mould public opinion, and no man or corporation has ever been big enough to withstand the universal adverse criticism of the publice when thoroughly aroused. Witness the men investigated by the Armstrong Committee, in New York, whom public opinion condemned. Where are they now? For in the final analysis, as Mr. Fair rightly said, "The Public is the Master," and we must deserve and keep its good opinion and commendation.

The President—The paper is now open for discussion, and we will be glad to hear from anyone.

Mr. Clabaugh—I think this is too good a paper on too great a subject to let go by default, and, although we can only reiterate the things that have been said by the writer of the paper, and those who have already discussed it, I don't think we can talk too much about

it. I think Mr. Fair has laid a foundation on which can be built one of the strongest and greatest benefits to the gas corporations of any paper that I have heard in a very long time. The discussion has taken up the points laid down by Mr. Fair in such a way that we can all understand and fully appreciate them. The discussion of Mr. Davis that I have just read is to my mind a most admirable one. It was written with a great deal of thought, yet it has only taken up the little things; but we know "the mighty oak from the little acorn grows," and we know some of our very greatest troubles and all of our troubles, as a rule, come from the little things. Now, a small complaint is just as vital, and should be taken just as much care of, as the most important one that can possibly come to your office. Mr. Davis has taken up the particular branch of the solicitor. Some of the companies give to the solicitor certain points on the work that he may do in addition to the sales that he may make. We know that it is human nature for every man to look out for himself, and it has been further said, "The devil take the hindmost," but if the same solicitor would stop to think for a moment that a satisfied customer is the very best foundation for him to work upon, he would get many sales that he might otherwise not make, through failure to pay attention to those things, and that is the point Mr. Davis is bringing out. It means nothing, as far as commissions go, to the salesman, because he sells nothing probably to the consumer who made the complaint; but I want to emphasize, for I do feel it most keenly, that we cannot pay too strict attention to the complaints. We are advertising and asking for them, and if we don't pay attention to them when we get them we are certainly not living up to our word or the statements that we put in print. In Omaha we are advertising good service, and it certainly would not be good service to receive a complaint and pay no attention to it, or put it off 2 or 3 days. Going back to the solicitor, I would say the one who looks after his customers, whether or not he sells something to them every time he sees them, which is very improbable, will in the long run make the greatest amount of sales of any man who you may employ. The man who only thinks of a sale, and having made it and got his money, stops there, has not gone even half-way. The man who retains his customer is the valuable man to the company, and I would rather have one man in my employ who would retain the old consumers, and never sell a dollar's worth to a new man, than one who runs the chances and occasionally brings in orders from new consumers, but destroys the goodwill of the old ones, for one old consumer is worth, to my mind, more than five new ones. We have five new ones in prospect all the time. The old one, when given no attention and driven from your books, is very much harder to get back again, but that is the small part of it—his not coming back to you. It goes very much farther than that. There isn't a man living who has not some influence and some friends, and when he is piqued against any company or corporation he at all times is going to do everything within his power to injure it, because that spirit of revenge is in human nature. We got it from the barbarians and it is still with us. Therefore, a satisfied consumer is the very best asset that you can possibly have, and you will never get a satisfied consumer unless you do everything within your power to satisfy him. There is scarcely a man living who cannot be reached by fair and honest treatment. As Mr. Fair said, there are certain complainers who will always be with us. Why, if everything were perfect, we would have a heaven on earth! I don't expect to see that, and it is just because we have these complaints that we must be wideawake and progressive business men.

Mr. Burt—There always must be a villain in the plot, and it seems to me this discussion is going along almost too smoothly. There are cases where a man, persistently and continuously ugly, refuses to pay his bill time and time again. What are you going to do with him; cut off his gas? I would like to have that phase of the question discussed a little.

Mr. Carson—I don't know the particular case Mr. Burt refers to, but I have an instance in mind, and of my own experience, in which a man absolutely refused to pay his bill, kindly remarking that we were a set of thieves. He always thought he could beat us, and we could just sue him for it. We took the meter out, tested it and found it correct, investigated the matter carefully, and found what we thought to be the cause of the excess bill, which was for a restaurant using a 3-burner hot plate. Well, we didn't sue the man or take his meter out, but we finally got him interested enough so that he would consent to test his own meter. He very reluctantly said that he would do it. He knew it wouldn't do any good, but he would try it. We got him up to our office and first had him test some new meters; then he tested his own, then tested the new ones again, next we got him to test some other meters in use, and he became interested in meter testing, which, of course, is a very simple thing. After he got through he said, "How much do I owe you?" We said, "We will leave that to you; whatever you think is right." He sat down and wrote his check for the full bill, and he is a good customer to-day. I don't think all consumers are that way. Mr. Addy remarked that his people would meet him half-way. I think human nature is a good deal the same, the world over. I believe the average person, if you meet him half-way will do the same with you, and the sooner the public service corporations realize that the better off they are. I believe good service is not only of primary importance, but is absolutely necessary. If you give proper service, and deliver the goods, the average customer is not begging for any charities or rebates or discounts. He wants service, and is willing to pay for it a fair price. We know that complaint of the railroads by the public has been more largely a question of service than of rates. When trains are late and service is poor the public immediately protest, as, of course, they have a right to, and I think that is largely true in any public service business. I listened with a great deal of interest to Mr. Fair's paper, and think it one of the best I ever heard. I agree with everything that he has said on the question, which is one of vital importance to this business. I believe good service is of first importance, and meeting the public half-way is also necessary. It is a broad subject, and one in which we are all very much interested. The personal element has a great deal to do with the company's success or failure in dealing with the public. I think our employees who come in direct contact with the consumers should be affable, accustomed and fully competent to deal with the conditions as the meet them, but good service is also very important.

Mr. Shacklette—Mr. Clabaugh's personal remarks referred strongly to the solicitor-representative. It always seemed to me we won't completely get down to this idea of selling service, rather than gas appliances (which, of course, is what we want to sell ultimately), until we get away from the commission solicitor. The latter is working for himself primarily; only incidentally for the company. When we get our representatives to the point where they feel that the principal idea in taking an order is to sell gas year after year, and more of it each subsequent year to that customer, we will have them trained along the right line. Where the solicitor is interested merely in getting his order booked and receiving his commission for it, he unintentionally misrepresents little things, which later prove a boomerang to the company and hold back sales. With my limited observation it has always seemed that the gas company was pushing the sale of appliances rather than the sale of gas, although the commission solicitor, generally speaking, was the one who had to do with their old customers. I am fully convinced that that is one of the reasons our solicitor-representative must be a district manager in a measure, and must look after the complaints as well as the new business.

Mr. Macbeth—I have been very much interested in the discussion, and although I had not intended saying anything I want to take slight exception to Mr. Shacklette's remarks regarding the commission, and I think the objection Mr. Shacklette brings up could be corrected by an arrangement which would place a penalty on the commission or have some back-action on this unsatisfactory kind of business which does not stay sold and which does not mean satisfied consumers. Some time ago I attended a meeting where the question came up of having salesmen and fitters get together once a month in the evening to discuss the general good of the business in that town. The manager remarked that he had been practically unable to get his men to come in, that they were on salary, and when their day's work was done they didn't care. I do know that when men are working on a commission that is wisely and properly based, the only time those men are not attending to business is when they have to sleep, and I don't think there is any doubt in the illuminating end of the gas business that a man must look after some of his customers after hours and go around and see that the service is satisfactory. The lighting proposition has turned over very completely, mostly due, I think, to a general awakening along the lines of the advantages which may accrue to a gas company through taking up illuminating engineering, and possibly partly through being forced to it by the electric competition. I remember a couple of years ago being in a city where we were discussing the question of laying out outlets in a building, and the manager of that department told me he had always made certain calculations on lighting buildings—most of the lamps used at that time were arc lamps. I asked him what his rule

was, and he said one arc l amp to 144 square feet. I had the pleasure a week so ago of reading a report of a lighting installation sold in a department store in Altoona, Pa., where the builder called in the gas man and electric man and asked them for their propositions on lighting. After thoroughly going over the conditions the gas man secured the business, and I saw photographs of the completed installations, which were quite satisfactory to the owners, giving a fairly high intensity of illumination, which was quite uniform, as would be required in a building of that character. The arrangement of spacing required a consumption of 2 cubic feet of gas per 100 square feet on that floor, which would be about equivalent to 1 arc lamp burning about 20 cubic feet per 1,000 square feet of floor surface. Here was business that the other gas man could not have obtained, or if it had been secured it would be on misrepresentation and would not stay sold. I think the matter of commissions could be taken up in such a way that there could be a gradually increasing commission, running through other months, which could be stopped and back fines placed for business that does not stand. In other words, this would cause the solicitor to do all that is possible to bring out the right kind of business, and appreciate at the same time that the right kind of business—that which is best for the company and for the consumer - is that which will stay sold, and it has been my experience that that can best be produced on commission rather than on salary.

Mr. Maynard—I have usually been silent on the discussion of any subject before the organization relative to fuel or illumination or kindred topics, but when you take up the subject of public relations I feel that I have a little right to speak, and owe it to myself to give expression to my ideas along that line. The first thing I want to do is to compliment Mr. Fair on his paper, and to concede the wisdom of the comment made upon it by the gentleman who followed him, and to remark that those ideas thoroughly coincide with mine. There is a far cry between "the-public-be-damned" policy of Vanderbilt and "the-public-be-served" policy of McAdoo, of which Mr. Fair speaks. To my mind the reason for that has been the realization by public utility companies that they are simply business organizations, dependent for their success upon the sale of certain products. We know in this State that some of the corporations who have thought that the securing of a franchise would solve all the questions of public relations have found their mistake. We know also that those who have not will do so some time. The franchise that the public gives us can describe the quality of the gas we make, it can limit the term of our contract, and in some States it can set a mark beyond which the capitalization shall not go; but no franchise can determine the position that a public utility company can occupy in any community. I think it will be conceded that the company must say what those relations shall be. Now, the service department will determine what those relations are, and the service department, to my mind, is the attitude of the company, and the conduct of its employees toward that community; and it is reflected by every man on the pay-roll of that company, whether he be general manager, secretary, a fitter or a complaint man. The point I want to make is that the position we occupy in the community is a composite picture, one may say, of everything you do toward that community. While it may have been true in the past, possibly, that corporations were creatures without souls, there never has been a corporation that had not a character and a reputation. This character or reputation is simply what we make ourselves; it is a reflection, as I say, of our attitude toward the people. The character is what we pretend to do, but the reputation is what the public think we do; and we must so act in every relation we have with the public that the two conceptions may coincide—that what we pretend to do and what the people think we do are the same. That means we must not only appear good but that we must make good; and that time will never come until the time that Mr. Clabaugh speaks about, when we can look on the complaint, not in the light of a nuisance, but take it up as a thing to be met with as a matter of course, cheerfully and carefully treated. I may be prejudiced, but to my mind the service department of a public utility corporation is as important as any part of it, and requires the closest and strictest attention that can possibly be given it, and it particularly requires an intimate acquaintance with everybody you serve in your community. I admit that it is impossible for the manager or the fitter to know everybody, but the employees as a whole must be in close touch with every consumer that you have. It is not particularly necessary to be a "mixer," a term that has been used so frequently; but the word suits me, and I am perfectly willing to say, be a mixer. I will tell you right now that it doesn't mean "mixed drinks" continually to be a mixer, but to get out and mix good fellowship, kindness, thoughtfulness and attentiveness, and be ready every hour in the day or night to get a good new friend for your company or do something that will serve an old one.

Mr. Grey—A word in behalf of the solicitor who is working on commission and making a great many sales. He is usually a man who is wideawake and on the job every minute, and it has certainly been my experience that a man of this type turns in more complaints on our own service than the average solicitor. As we maintain a complaint department to attend to the complaints that he turns in, I think we should be able to give good service to our consumers by having a man who calls continually on a consumer, and, of course, makes a great many sales.

Mr. Fair—I coincide fully with the views of Messrs. Macbeth and Grey as to the matter of commission solicitors. I think Mr. Shacklette possibly went a little too far in his statement on that point, and in this connection I will say that Mr. Searle, of Rochester, N. Y., who, as we all know, has a very complete and efficient commercial department, made the statement that for a period of 12 months they tried their solicitors working on a straight salary, and were ready to go back to the old system of commission before the expiration of that time. If I remember correctly, he stated that their business on straight salary was less than 50 per cent. that it was when the same men were working on a commission basis.

The President - Gentlemen, I think it is unnecessary, after all the appreciation that has been expressed of Mr. Fair's paper, to tender him a vote of thanks. The time for adjournment has arrived, and the meeting will reconvene at 2 o,clock, when Mr. Dawes will address us. He comes to us at our invitation to deliver this address, and in courtesy to him I will ask you all to be here promptly at 2 o'clock, as we need a full attendance to show our appreciation of his kindness.

FIRST DAY—AFTERNOON SESSION.

The President (having called the meeting to o rder) introduced Mr. Rufus C. Dawes, of Chicago, who delivered the following address:

ADDRESS OF MR. DAWES.

[For the text of the Dawes' Address, see JOURNAL, *ante*, p. 99.]

On motion of Mr. Clabaugh a rising vote of thanks was tendered to Mr. Dawes, whose address was characterized by the President as a very timely one and sure to be much appreciated by all.

The President—Through the absence of some members who were to discuss the paper on "Depreciation," it will be passed until tomorrow. He then asked Mr. Fair to read the paper by Mr. E. B. Myers, of Omaha, on

BOILER FUEL LEAKS.

[For the text of the Myers' paper, see JOURNAL, *ante*, p. 148.]

Discussion.

Mr. Burt—This very complete paper has been handled in excellent manner, which makes it difficult to discuss, the ground having been so thoroughly covered. However, I was impressed with one thing—and I believe no one can help but be impressed with it in this question of leaks in boiler fuel—the necessity of having good men to operate the plant. Take the packing of pumps, the renewing of piston rods when necessary, and proper manipulation in holder heating, also the manipulation in the operation of the steam in the generator—there is scarcely a place to which you can turn that does not seem necessary to have the right sort of a man at the helm. In other words, machinery will not run itself. Too often it is allowed to run itself, and this is the cause of a larger per cent. of boiler fuel leakage than almost any other source. That one thing, perhaps, I would emphasize in the paper: Get a good man and train him right; keep him in his place; but treat him right. Make him feel at home, treating him as well as you would any other man in the office—he is just as important to the development of the business and the proper operation of the plant as anybody on the premises. Always think of him as a human being. He is working in a hot place and a hard place, especially in the summer time, is this fellow who is looking after these little details that go to the successful operation of the plant. I would urge, therefore, the one point that the man at the gun be looked after. One other thing to which I wish to call attention, although it may be foreign to the paper, is one that I hoped might be brought out, and that is the question of the amount of boiler fuel required in the operation of the average plant; not only the average gas plant, but a combination gas and electric plant. At Waterloo we own the gas and electric plants, and the steam is sup-

plied to it from the boilers of the electric station. An analysis of results in the operation of any plant is essential to its success, and if you don't know what the plant is doing, how much steam is being used for this, that or other purpose, and are not sure whether the gas plant is wasting steam or the electric plant wasting steam, it is a difficult matter to get the best results. As a rule, I have found it to be the case with a number of combined plants that estimates are made only for determining how much coal to charge to the gas plant and how much to the electric plant for operating purposes. At best this is based on the judgment of the local man, taking into account the local conditions, and basing it further on average results secured in other stations. That, in my judgment, is a very poor way to do, because no conditions are the same in any two plants. A certain water gas set may be operated at the highest efficiency in a certain plant, but another station could not depend upon using those figures for its estimate. As I have maintained a number of times, it is immaterial, as far as the financial side of the question is concerned, whether all of the fuel is charged to the gas plant or electric plant, just so the man who in charge of operation knows just what the results should be and can interpret them correctly. As to the question of how much boiler fuel should be used in the average plant, as near as I can arrive at the results, an average run between 20 and 30 pounds of coal per 1,000 cubic feet of gas made. It depends on the quality of the coal, whether it is high-grade Eastern, or an Illinois variety of coal running between 11,000 and 13,000 B.T.U. per pound, or Iowa coal, which runs about 3,000 or 9,000 B.T.U. per pound, and I believe it should not be arbitrarily placed at that figure the year round. The time of the year should be taken into account. In winter time, when the holder is being heated, the amount is larger. I hope next year we will have a paper on that subject.

Mr. Bertke—Mr. Myers covered this subject of boiler fuel leaks very thoroughly, and has discussed in detail the numerous items which enter into this important subject, leaving but very little for me to add. One item which Mr. Myers has treated and given importance is the loss due to incomplete combustion; but in his list of the percentages of losses of the different items he allows but 1 per cent. due to incomplete combustion. It is my belief that this phase of improper conditions in the furnace is the all-important factor in boiler room economy. Such items as the internal conditions of the boiler itself, insufficient insulation, leakage in walls, the question of suitable grates, etc., are also important; but these belong to the class of troubles which are quite easy to cure, and once remedied are more likely to be permanent. In burning coal for the development of steam, a great many varying conditions continually present themselves, so that it is quite difficult to operate at the highest efficiency. To get the highest efficiency means to completely burn the combustible with the least amount of surplus air. An insufficient supply of air for the furnace means a loss of available heat due to the formation of carbon monoxide, instead of carbon dioxide. If there is a charge surplus of air, this surplus absorbs heat energy and carries it up the chimney. The heat so absorbed is absolute loss, and the higher the stack temperature the better we are heating this air and consequently the greater the resulting loss of fuel. The largest proportion of the losses, due to improper operation of the furnace, is directly due to the large excess of air. A constantly smoking chimney shows that conditions in the furnace are not right. Either there is an insufficient supply of air over the fire to mix with the combustible gases, or too low a temperature in the combustion area, or too small an amount of time and space for the gases to complete combustion before being cooled on the cooler boiler surfaces. A clear stack is not always proof that the furnace is acting economically, because a large amount of excess air may be passing through the furnace. Conditions may also exist in which a large amount of excess air is passing through the furnace, and combustible gases are also passing up the stack at the same time. The air and combustion gases may not be a complete mixture, the temperature in the combustion area too low, or the flame may be chilled upon the cold surfaces of the boiler before combustion is completed. The limits between which we have no smoke and highest efficiency are very narrow. Between these limits we have complete combustion, with the minimum supply of excess air. If we go beyond the limits in one direction we have losses of heat due to excess air, and in the other direction we have incomplete combustion or smoke. If we operate, therefore, in the neighborhood of these limits, varying conditions in the furnace will carry you from one side to the other. At times the chimney will smoke, while at other times there will be none. Conditions like this at the stack usually indicate that the furnace is being operated economically. If there is no smoke at all, we cannot tell merely from the stack conditions to what extent excess air is passing through the furnace. A good method for testing the efficiency of the furnace is in testing for carbon dioxide in the furnace gases. We are using an Orsat apparatus, with which we can readily and accurately determine the percentages of carbon dioxide, carbon monoxide and oxygen. A great deal depends upon the conditions under which the samples of gas are taken, and upon the place at the furnace from which the sample is taken. The sample should be taken over some considerable period of time in order to get an average sample, as the gases vary a great deal in composition, due to the opening of fire doors when firing, throwing on of fresh coal, etc. Due care must be exercised to determine the real economic meaning of these analyses. Air leaks in the boiler walls may reduce the percentage of carbon dioxide to half what you are expecting. The location of these leaks determines to what extent they are harmful, for the closer these leaks are to the furnace the more damage will be done. The question of draft is an important item. The only purpose which draft serves is to consume fuel, and as it is to the benefit of the coal results to consume only enough fuel to hold up the steam, we will do well to carry only enough draft (and no more) to do this, providing the amount of draft is sufficient to produce the highest percentage of carbon monoxide and no combustible gases in the stack. To determine the draft suitable for the purpose, test the gases for carbon dioxide, carbon monoxide and oxygen, to see if the percentage of oxygen is less than about 6 times the amount of carbon monoxide. If the oxygen percentage is less than this, supply more air; if greater, reduce the amount of air.

Mr. Fair—Reference was made to the proper insulating of the steam line to the holder. I would be very much interested to hear, from some of the gentlemen in charge of the smaller plants, having small holders and small works force, regarding their experience last winter with holders. How this steam line to the holder is run and of what the insulation consists.

Mr. Chubb—We installed an outlying holder last year of 20,000 capacity, covering the boiler itself with sheet asbestos and over it placed a kind of plaster, covering the steam line to the holder with a regular asbestos pipe covering. Over that we put a very heavy layer of roofing material, then painted it with tar paint externally. We covered all the steam pipe running to the holder. I fancy we have about as severe winters in that country as any of you, and we never had any trouble all winter keeping the lines drained or having them freeze up. I might narrate an experience we had one time with a water tube boiler. The firebrick setting—in fact, the whole brick setting—had deteriorated so and became so pitted with cracks that we concluded to re-brick the boiler. We had considerable trouble over getting in to clean the rear flues, so I thought I would make more room, thus rendering it easier to clean the flues. Accordingly, when we set the boiler we made the combustion chamber in the back larger; but when we came to fire up we couldn't make steam, all on account of the combustion chamber in the rear not being the right size. I thought possibly some who are having trouble might find it in the combustion chamber.

Mr. Burt—Can anyone here tell us about the results of heating a holder; the amount of steam that it would require? I have heard it variously estimated at from 25 to 100 per cent. of the amount of steam required to operate the gas plant.

Mr. Hopper—I would not care to say these are exact figures, but I would say about 20 per cent., or 5 pounds of boiler fuel per 1,000 feet of gas made, are required to heat a million-foot holder.

Mr. Burt—Is your installation in good shape?

Mr. Hopper—Yes, sir. I might say to Mr. Fair also that there is an underground pipe covering on the market which I believe is very good. We found it very satisfactory.

The President—I would like to know if anyone present has had any experience in heating holders by circulating warm water from the condensers or other sources?

Mr. Chubb—We have two holders, one of which is ½ a mile from the plant, the other is ¼ mile, wherefore we have had a good deal of experience in keeping holders warm during the winter time. This new one that I spoke of is a steel tank holder, entirely above the ground, heated by steam; and, to answer Mr. Burt's previous question, it took just about ¼ as much coal to keep that holder from freezing up as it did to make 1,000 feet of gas. Not only that, but we had to have a man there 24 hours a day to keep up steam; while at the old holder (a brick tank in the ground), which is heated by circulating water, we didn't have to keep even one man there. That holder is of 100,000 cubic feet capacity set below the surface of the ground.

One man went there two or three times a day to fire up, and it didn't take ½ of the coal to keep that boiler warm that it did the other. My experience teaches that in every case where I could heat a holder by circulating water I should certainly do so.

Mr. Haskell—As I come from a "hot town," probably that is the reason we never have had any trouble with our holder. I am not a gas man, and probably did a fool thing, as some have told me since. I had trouble in taking care of the tar in condensation, so I conceived the idea of putting the water into my holder, and ran the condensation from the gas plant into the holder, and the tar is in there now.

The President—Is that a single-lift holder?

Mr. Haskell—Yes, sir; 30 feet across, and 16 feet high.

Mr. Hopper—Is it a storage or relief holder?

Mr. Haskell—The gas goes from that holder right into the town mains.

Mr. Shacklette—Many small water gas companies are doing exactly the same thing, and I think I recall a couple of coal gas companies that are likewise guilty. I would hardly recommend it with coal gas.

Mr. Lamb—Here is the plan we follow in Le Mars: We have a large well from which with a steam pump we pump the water, and I found last winter that it helped the keeping it from freezing problem to pump the water around the holder. When we have a case of freeze, I will tell you how we thaw out up there. Running as we do only 4 days a week we thaw with two steam jets, that is, we run to the holder with 1-inch pipe, from there we branch from ¼ to ½ the way round, dropping to the water and reduce to a ⅜-inch opening. We turn on a jet on one side and the other on the other, which circulates the water, and melt perhaps 3 or 4 inches of ice in a very short time. Our pipe is not covered in any way, which, of course, means a loss.

Mr. Shacklette—I certainly would not let any ice even start to accumulate in the holder if I could possibly avoid it.

Mr. Lamb—We keep this ice well broken, and don't allow it to accumulate so that it interferes with the pressure.

Mr. Bertke—We keep the water, both in the cups and in the tank, at the lowest possible temperature without freezing. If the weather is extremely cold we have a larger factor of safety, increasing the temperature of the water a trifle. We probably run up to 50° or 55° in the cups in the coldest weather, but try to keep the water just above the freezing point. We don't want ice to form in the cups, but neither do we want to waste the heat in heating the water in the cups to a higher temperature than necessary?

The President—Do you allow the water to get below 39° in the holder tank?

Mr. Bertke—At times; but ours is a brick tank.

Mr. Hopper—Have any of the gentlemen had experience with smoke consumers in boilers?

Mr. Burt—The question of smoke consumption is largely one of manipulation, although the construction of the firebox has a great deal to do with it. One arrangement by which the reflection of heat by the fire to the bed of fuel is such that it raises the temperature of the firebox to a point where combustion is bound to take place, because smoke results when the temperature of the gases is below the combustion point, and that may be overcome by proper firing. I have seen ordinary boilers fired in such a way that there was practically no smoke at all.

Mr. Chubb—Mr. Lamb, I believe, asked about the combustion chamber. Since he put in that lining his combustion chamber may be too small. I can't give him any figures, but if he knows the make of his boiler, and will write to the makers, they will readily tell him how big it should be, because they all make exhaustive tests and know just what size the combination chamber should be.

The President—Are there any other questions which you would like to ask in a general way? I think the remainder of this session shall be devoted to an informal discussion of any subject you want to bring up—the time is too short to take up another paper—and I am told that the National Electric Association found this general discussion system very profitable. You have opportunity to ask any questions or bring up any subject that might concern you at this time. We would like to hear from anybody who has problems. No doubt some if not all of you have them.

Mr. Shacklette—I suppose everyone of us at some time or other wants to look up a certain subject to find out all we can about it, both from the different Association "Proceedings," and from such trade publications as may have been gotten out. I was discussing the other day with some members of the Michigan Association the point of publishing "Proceedings" of different Associations in pamphlet form of uniform size, with the idea of getting the different manufacturers to eventually adopt the same size in their catalogues so that the subject matter coming before different Associations and appearing in trade publications on that subject might all go into your loose-leaf files together. The suggestion was made that each Association should adopt a color. While I don't suppose this Association will want to take any action on that at this time, I simply mention it because I think some of us at times can't find all on a subject that he would like to. The gentlemen who didn't know just how big to build their combustion chambers might find the papers, and also the trade matter, on that subject in their files, if it were in such shape that it could be filed together. The ordinary catalogue, as it now stands, is a bugbear, and the files of our technical papers are not very much better.

Mr. Lamb—Commencing a year ago, I understood that we were to have the different papers (in fact, everything in the convention) published in book form. I thought that was a great scheme. At the first convention of the Iowa District Gas Association that I attended, I wanted just that sort of a book, and I don't know why it wasn't published. I for one would like very much to have that book for my own benefit, on account of its value as a reference.

Mr. Fair—For the information of Mr. Lamb that point was taken up at the meeting of the Council last February, when it was decided to publish in single volume the "Proceedings" of the several conventions held by the Iowa District Gas Association, from the first up to and including this convention. A committee was appointed to take charge of this publication, and there is no question but that this publication will be issued. Am I not right, Mr. President?

The President—That is my understanding.

Mr. Smith—I realize from what I have heard here that much difference exists in the plants that are being operated by different men; also, their experience along the same lines differs very greatly. I was interested in what Mr. Haskell said in reference to his holder. He probably has a plant similar to my own. Starting out with a very small toy, he had to make the best he could of it. His holder likely was formerly a supply holder, and he has added the compression system. What I wish to bring before you is to try to get information regarding firing, and I have had probably as much trouble with that one item as with anything else. I have spoken with several men who are up-to-date in the gas business, and am frank to say my experience has not been along the lines of their information. I have a generator of the old standard. The firebrick are quite badly decayed, in some cases oil-soaked. The gas maker tries to drive the generator beyond its capacity, to find out that the make of the generator falls away down, and that the only remedy we have is to take out the firebrick and put in new, while some of the former are perfectly good. Of course, that entails a good deal of expense in a small plant. I have practically two other departments of municipal utility to look after, and as it is up to me to economize in every one of my different utilities, I would like to hear a few minutes' discussion along that line. You men who have larger machines don't have that trouble, for you have larger heating surface, and, therefore, can lose a certain part of your heating surface and still make a good quality of gas. As soon as our heating surface goes down, and our generating capacity is reduced by the brick being practically burned out, it is up to us to re-brick and re-line.

The President—Mr. Smith, tell us just what happened. Are your brick melted down together, or do they disintegrate?

Mr. Smith—No, sir. In the carburettor they become very heavily glazed, and when superheated, if the operator is not very careful, they become soaked through with oil. When you take them out they are black on the inside, and if they are burned flint-like in the carburettor, they are practically worthless. In some of your larger generators you don't have that; but we have it in the small ones.

The President—Do you inject this oil into your carburettor, superheater or generator?

Mr. Smith—In the top of the carburettor. The generator is all in one; it is not a 3-piece generator like some of the other plants. That is one of the troubles in some of the discussions. They have been somewhat misleading, because our generator is only a big iron box, and a man who has a 3-piece generator doesn't have so many troubles.

The President—As I understand you, you put the oil in the partition called the carburettor, and the partition called the superheater is where the brick get oil-soaked. Is it possible in your type of machine to put the oil in the generator?

Mr. Smith—In the new machines built along that line that is what

is being done, but in the old style of machine it would be impossible to change, for the distance between the bottom of the firebox and the fuel is too low to put the oil in without making lampblack.

Mr. Houck—I believe the question Mr. Smith wished to ask is whether this brick that has been so thoroughly burned is still good to put back into the generator, or is the life of the brick gone; whether this brick that has been burned so long has lost its life or can be used with efficiency?

The President—In other words, his question is, when a brick becomes glazed is the heating surface destroyed in any way? I understand he has been throwing those bricks away as soon as they become glazed. Could anyone place some light on the subject of the value of a brick after becoming glazed?

Mr. Brown—I think the brick lose life and won't hold the heat, and the trouble with his generator is that it doesn't hold enough brick. Then, when it gets heated up and he turns in a blast, by not having enough brick they cool off and the oil soaks into them. How many brick does it take?

Mr. Smith—About 1,100.

Mr. Brown—How many checkerbrick have you in your superheater?

Mr. Smith—About 350, and about 550 in the side walls.

Mr. Brown—I think you have too few. If you had more they would hold the heat better.

The President—Do we want to go on record here that when a brick is glazed it must be thrown away? Mr. Chubb, do you throw your brick away when they become glazed, if they ever do?

Mr. Chubb—We do not throw a brick away as long as it is whole. I think, perhaps, in a small machine the bricks may get into a little different condition than in our larger machines. We very seldom get a glazed brick. When we re-check them we take them all out, cleaning them with a brush or chisel, if necessary, where they are carbonized, and put them all back. I have never been able to see any difference between the old brick and the new in the machine; but, as I say, it may be possible that the bricks in these smaller machines get into a different state. I would not be sure about that. If they became really glazed, I don't know but that might have some effect.

The President—When a brick becomes glazed, you would still use it until it went to pieces; wouldn't you?

Mr. Chubb—Yes, sir.

The President—Personally I would like to have all glazed brick in my fixing chambers. I don't see any reason why a glazed brick is not better than any other kind. The glazed brick, as I understand, doesn't absorb the oil; you don't want them to absorb it. As long as it is a brick, I would keep it, and I think if Mr. Smith's trouble is all in regard to glazed bricks, I would use them as long as they hold their form. You have as much heating surface, that is all you want, and they are far better than brick soaked with oil. I would keep my brick until they lost their form entirely, so they couldn't be built up as checkerwork.

Mr. Houck—I think that is the point Mr. Smith wished to bring out. I thought of that myself, whether the brick would retain heat, after being used so long, as well as new brick. It is not so much the matter of glazed brick with me—I don't have any trouble with that in the fire chambers; it is whether the brick, after being used so long, lose their life. Whether they hold heat as well as the new brick.

The President—It is a very common practice in building arches to paint them with a salt solution, so that when they are first heated they will glaze; it is an advantage. And with that idea, when we re-line our generators we paint them with a salt solution so they will become glazed and nothing will cling to them, or is less apt to. And, while this may not be a parallel case in the fixing chamber, I should think it would be partially so, and that if your brick were glazed there would be less chance for dust, lampblack, ashes, etc., clinging to them. It doesn't destroy the heating surface of the absorption of heat qualities at all; it merely changes the outside layer, forming a glass or a silicate coating, so that you have just as good brick as before.

Mr. Burt—Has anyone present had any recent experience in the use of tar for road-making? We have a gas producer plant operating a factory, that is having a good deal of trouble with tar. I was asked the other day what could be done with it. It was causing a good deal of annoyance, getting over the floor, and they were packing it in barrels and sticking it around the yard. It is in the nature of the water gas tar. Is there any market for it? Is anyone using it in this vicinity for road-making purposes, so that there is a market for it?

Mr. Clifford—At St. Charles we have a way of disposing of our tar that may be of interest to some here. We contract our tar to the Kettle River quarries, Madison, Wis., shipping it in tank cars, and get 3 cents a gallon for it. We find it a very good way to dispose of it.

The President—There is nothing really so interesting to me as the disposition of tar. I have worked on that for so many years that you don't want to get me started; but I think the reason Mr. Clifford is able to get 3 cents for his tar is that other people have been energetic and disposed of their tar for road-building and other purposes and he reaped the benefit of it in boosting the tar market. If Omaha would throw 500,000 gallons of tar on the market each year (that is what we are producing), I feel sure the tar market in this section would not be as good as it is now; and I think some of us ought to keep the tar market up by working along this line of trying to dispose of our tar other than selling it to somebody else to make a profit out of it. Every gas company should find enough market for all the tar it produces for roadway building. If Omaha can dispose of 500,000 gallons a year, it should not trouble the rest of you to dispose of a small quantity. You have just as many country roads around you as we have. We propose to build a tar road from Omaha to Lincoln some day—we are on the way, if the tar will hold out; and we may come to some of you to buy your tar to help us out. In that connection we ran a little short of tar and had to call on Council Bluffs to help us out. They very kindly came to our assistance. I think you gentlemen should not be satisfied with selling your tar at 3 cents a gallon, when you have to reduce the price of your gas, because tar is worth more than 3 cents a gallon if it is properly prepared and the water eliminated. It hurts us for you to dispose of your tar below the market price, and 3 cents is below the market price.

Mr. Fair—In that connection I think the smaller gas companies in our part of the country owe Mr. Waring personally a vote of thanks for his efforts in the matter of tar. He spent a great deal of time and worked up a great market for it, and, as he says, if the Omaha Company had thrown this vast quantity of tar on the market, Mr. Clifford or others would not have been able to get 3 cents for their tar. But I will say further that Mr. Clifford, or anybody else operating a small plant, can build up a very profitable trade without much effort in selling water gas tar for domestic consumption alone. We sell it to the lumber companies, to the coal mines and the wood preservative companies, getting 10 cents a gallon; but 4 years ago there was absolutely no market for it in this part of the country. We pumped it into the relief holders and stored it, hoping that some such condition would come about as we have at present here, owing to Mr. Waring's efforts.

Mr. Burt—There is left somewhat of the impression that the President's efforts were purely philanthropic on this question, and that his not throwing that quantity of tar on the market was for the benefit of our other companies alone. Do I understand that you are not receiving as much as 3 cents a gallon for that tar, Mr. Waring?

The President—We are getting $7.50 a barrel for our tar, 15 cents a gallon, and sell it in barrel lots. There is a reduction on that in large quantities. There is no reason why everybody should not get $7.50 a barrel for tar at their gas works. Of course, there is some expense attached for the barrel, and for the handling, and we have spent a great deal for advertising; but I don't think that is necessary, if you haven't so much to move. However, one thing absolutely necessary, is to eliminate all water and lampblack. How to do that you can readily find in the literature on that subject—I think more has been written on tar in the past 5 years than on any other subject. The articles on that in the GAS JOURNALS are almost as numerous as were those on naphthaline 10 years ago.

Mr. English—I would like to ask if anyone has tried tar on pure gumbo roads? The reason I ask that is we have tar in Council Bluffs on Broadway. After a heavy rain the road is all cut up, but as soon as it dries out it immediately levels itself and comes right down to the fine earth. It has only had two applications up to the present time, which were put on late last fall, when it should not have been done. Last winter the roadway was terribly cut up; but this spring, as soon as it thawed out and dried off, the road immediately leveled itself. I would suggest that if it has not been tried on the gumbo someone should so try it.

The President—If the road is so situated that it cannot be made perfectly dry, or doesn't become perfectly dry, I don't believe an application of tar would do any good. In other words, if it is through low land, the moisture being never out of it, I think tar would be absolutely useless. A road to be properly treated with tar must be

perfectly dry, and the tar should be applied, preferably, hot in warm weather. Gumbo roads, I think as a rule, are in low land, where they generally keep moist; but if they are not, I think, if dragged with the Johnson drag, as described at the Good Road Convention, an application of tar in warm, dry weather will make a permanent, waterproof road. Of course, this application must be repeated, according to the amount of travel going over it. On ordinary country roads once a season will be sufficient. But any road must be benefited by the application of tar, whether the road is of dirt, sand or what not, unless it is one which remains damp all the time. Never use tar in the winter time, because it is throwing away your time and money. We have around Omaha about 40 miles of tarred road, and we will hardly be able to extend this very materially, because it takes almost all our product to keep them up.

Mr. Burt—Has anyone had any experience with burning tar under boilers?

Mr. Hopper—We burned tar in Des Moines under our boilers on numerous occasions with specially prepared and designed burners, and it is perfectly practicable. I don't know that I would recommend it though, for it is exceptionally hard on the bottom boiler sheet. The intense heat has to be deflected to the bottom of the firebox and a special arch made over the firebox, which protects the iron plate on the boiler. Even then it is hard on it, and after rather exhaustive trials we practically gave it up.

Mr. Burt—Could it be burned at 3 cents a gallon to advantage or not?

Mr. Lamb—I am much interested in the question whether it pays to use tar as a boiler fuel. I have had some experience in pumping tar into a firebox with a jet pump, and would like to know whether it is advisable to do it.

The President—In the Iowa district it would not pay to burn tar under the boilers, unless in a town very far from the coal mines. Probably away up in Mr. Chubb's town it may pay. You probably know the evaporation of the coal you are using. In other words, I think that coal in this section would evaporate about 6 pounds of water to a pound of coal from and at 212°. A gallon of tar will evaporate, under the most favorable circumstances, not to exceed 14 pounds of water. So that, knowing the cost of your coal, you can figure just what the value of your tar would be per pound. There are about 9 pounds of tar to the gallon, so it is a very easy proposition to figure what your tar is worth as boiler fuel. In Sioux City it would be worth about 2 cents, I think.

Mr. Chubb—We burn all the tar for which we don't have local sale under the boilers, and always have; and it figures very close to tar being worth in cents per gallon what coal is in dollars per ton. If the coal is worth $3 per ton tar is worth 3 cents per gallon.

The President—I think coal is worth about $2 a ton in Sioux City, and, calling the tar worth 2 cents per gallon, that would check out Mr. Chubb's figures. Mr. Chubb is very far from the coal mines, I believe, and his freight rate is very high. So there are cases where tar can be used profitably under the boilers.

Mr. Smith—I would like to ask what kind of gas coal can be bought in Sioux City for $3 per ton?

The President—It is boiler fuel we are speaking about.

Mr. Lamb—I believe I have read practically everything the President has written on tarring roads, but I would like to ask what method he uses, in the first place, to get it before the people or before the proper officers, in order to get a demand for it.

The President—The first thing we do is to get permission to prepare a road ready for the tar. Then apply the tar and make a public demonstration, and bring the authorities over to see it. In 1905 we made our first demonstration in Omaha, which was all that was necessary. We have been selling tar ever since for that purpose, both for painting roads and for building them. When I say building them, I mean concrete roads by the penetration system, and when I say painting roads, I mean sprinkling on a dirt, cinder or macadam road with a sprinkler wagon similar to a water wagon, the tar being sprinkled hot.

Mr. Lamb—I was surprised to know that tar was sold for 3 cents. We sell practically all that we have for 10 cents clear to us. The purchaser furnishes the barrel, we simply fill it.

Mr. Haskell—Why use coal or why use coke in generators? Most plants use coke, but at Grand Island coal only is used.

The President—If I remember, Grand Island makes coal gas.

Mr. Haskell—No; they make water gas, using Pennsylvania hard coal.

The President—Of course, anthracite coal is the best generator fuel you can get, but I should imagine at Grand Island it would be rather dear.

Mr. Haskell—Nine dollars per ton.

The President—That is largely a question of business judgment rather than anything else. Evidently coke must cost more than that or they would not use hard coal.

Mr. Burt—Sometimes many are bashful about asking questions because they think they may display their ignorance. I don't think that feeling ought to obtain at all; if a man wants information he should ask for it. The question has been asked, what is meant by Solvay coke? I suppose there are others who would like to know, and I think no one can tell us better than the President.

Mr. McLean—Doesn't it mean the best advertised coke? I will say, for the benefit of the man who made the inquiry about Grand Island, that we ship to the dealer in Grand Island. The cost of coke must be nearly as high as Pennsylvania anthracite coal at that point, because the freight rate is very heavy, something over $3 per ton. As to Mr. Burt's question, I think Solvay coke would be distinguished from other coke only in that it is made in a coke oven instead of in retorts. We know that, instead of adhering to coal of one mine, as they formerly did, they now make mixtures at times. But Solvay coke has been made from coals in the Pittsburgh region, and a good deal of what is called Solvay coke is made from West Virginia coal. I think it is all treated in the same way, and it differs more in that particular than in the physical structure or chemical composition. The fixed carbon and volatile matter do not vary much. The gas men handling coke, offering their product as domestic coke, for which it is particularly well adapted, sometimes come in competition with oven cokes, which are offered as best for everything. If one wishes to know, it doesn't matter what you wish coke for, or how it is to be consumed. The oven coke is offered as the best, but, of course, nearly every oven coke, you know, is burned much longer than retort or gas coke. Most of those operating coal gas plants at the present time, and running generative furnaces, operate 4-hour charges, and the generative plants are running from 24 to 48 and 72 hours oftener than anything else. But I believe the Solvay coke offered through the Northwest differs from gas coke in the length of time, primarily, that it has been submitted to the heat of the oven. I think in physical structure and chemical composition it differs very little from Youghiogheny gas coke.

The President—For the benefit of those operating small water gas machines I will say it has been my experience that what is known as gas house coke can be used to better advantage than Solvay or oven coke, provided the prices are the same and the quality of the coke or the coal from which the cokes are made is the same. In other words, as the gentleman who just spoke said, if they were made from the same coal they only differ in the length of baking; but the gas coke ignites more readily than the harder coke, or that which has been baked longer, and for that reason it is much easier to operate what we call base steam generators with the gas coke than it is with the oven or Solvay coke. On the other hand, I would prefer to use the Solvay or oven coke in operating the reverse steam machines, for the reason there is not so much breeze from the harder coke. But the chemical analysis of both is practically the same, with the exception, I think, of a little higher volatile matter and a little lower carbon in the gas coke.

Mr. McLean—Raising one other question here about grades of coke, have you ever used Milwaukee screened gas coke in a generator?

The President—I have used coke made by the Milwaukee Gas Company, and I presume they had roller screens. The coke was quite free from breeze when I received it. What I referred to was that gas coke, if handled too much, or frequently, from one location to another, was more liable to break up than coke that had been carbonized longer. In other words, 72-hour coke will stand very much more rough usage than 48-hour coke, and 4 hour coke will not stand the treatment that 48-hour coke will.

Mr. McLean—That is undoubtedly correct, but some of the coke that has been screened is put into the yard and packed into the bins with a steam shovel. It has been handled several times after screening before it gets to the cars, and then it would be more friable than the oven coke.

The President—For the benefit of those operating small coal gas plants, I would like to say they do not take the precaution to eliminate breeze from their coke and so prepare properly. For that reason gas coke, as Mr. McLean I think will bear me out, has a very bad name. Certain gas works in this district from which I have bought coke did screen it but didn't take care of it properly. They

would turn the hose on it, loading it full of water and breeze that were of no value. In that way they were only injuring the market for their product, and, therefore, when you bought again you figured on getting water and breeze and made your prices accordingly. I believe that gas house coke, just like tar or any other by-product, can be handled properly and compete with Solvay or oven coke for any place except foundry purposes, where it has to hold up.

Mr. Carson—Along that line I should like to ask if any companies are represented here that use hoppers and quench the coke with steam in place of water?

The President—Evidently no one has had any experience. Can you tell us the advantages or disadvantages of that method?

Mr. Carson—No, I can't; only from what was claimed by parties who have the apparatus to sell, or the right to use it. It is said that by dropping the coke into the hopper immediately and quenching with steam eliminates the necessity of soaking it up with water, and also gives a higher percentage of coke and a smaller percentage of breeze. The coke is dropped into a hopper and quenched with steam jets, and from there it is loaded directly into a car beneath the hopper, so there is very little breakage. I though possibly someone in this district might have had experience in that method. We were thinking of installing it, and I should like some information on the subject.

Mr. Burt—Only one point occurs to me from the physical standpoint. I don't know anything about the process, but everyone knows that in evaporating water into steam a great deal of heat is transformed into latent heat in the steam. It seems to me that if water were used it would have far greater cooling effect for the quantity used than to use a given quantity of steam.

The President—On the surface it occurs to me the amount of steam required would be rather expensive.

Mr. Carson—It is claimed that it is much more economical to use steam than to use water; besides, it makes a better colored coke (not so dark or black) and with less breeze, because it is confined closely in this air-tight hopper and practically smothered with steam.

The President—My thought is it would take more water in the form of steam at 212° to quench coke than it would water at 70°.

Mr. Carson—That is probably true, but the very question raised here is we have been putting too much water on coke, and that it is to get away from that that this plan of steam quenching has been put out, besides giving better color to the coke. Your experience, and that of many of us as well, is that your men are liable to throw too much water on the coke—more than is needed—and it is a waste of water. I would like to ask Mr. McLean what he thinks of the process.

Mr. McLean—As far as I understand, Mr. Carson is referring to the method of quenching coke that I think was instituted, where the chutes were put in primarily to save labor in handling the coke. It was found, I believe, that by quenching with steam the coke had a better color, but I was not aware that any economy in water was claimed for it, and I feel very sure that no economies of that kind are worth considering. I think Davenport is contemplating some similar arrangement in the Burke Institute for holding its carbonizing vessels; but the virtue of the plan for handling the coke lies chiefly in the economy of loading the coke to these bins. As far as the treatment of water or steam is concerned, I heard nothing at all about the saving of water, but it is claimed, and perhaps justified, that by quenching with steam the coke has a better appearance, although it is the same coke.

The President—One question I would like to ask is, what do you do with the condensation from your plant in your holder and in your drips? I think this is a matter we ought to consider at the present time. We have two B. & W. boilers, 250-horse power, and for the past 3 weeks we have been operating one on coal, the other on holder oil and condensation from the drips that we have accumulated in the past 6 months. Some of you may have been throwing this away, or you may know of a better way of disposing of it than using it under your boilers. The reason we so used it was we couldn't buy coal, and, having this on hand and without a ready market for it, we tried the plan; I thought possibly what might be a nuisance might be converted into a profit.

Mr. McLean—May I inquire what precautions you give to the fireman in handling that material?

The President—It is a B. & W. hand-fired setting. We cover the grate bars with a thin layer of cinders, and we use a spray very similar to the spray designed for burning tar by Mr. C. F. Prichard, of Lynn, Mass. The precaution we observe is to leave the ash doors open. Mr. McLean's point is very well taken, because several years ago, when doing this with tar, we left the ash doors closed and the fireman used more tar than was burned. It went down the ash-pit and formed gas, and an explosion took place that threw the ash doors open, and the fireman and engineer were burned, fortunately not seriously; but it is very important to have a thorough circulation below the grate bars, so that no gas can form. It is also important for the fireman to see that the oil burners remain ignited, otherwise you will have a flash or explosion in the combustion chamber. Those of you who have burned tar can burn this oil very similarly. We do not have the receptacle from which we draw this tar in any proximity to the boilers; it is 300 feet away and piped to them, a small sight-feed is put there, placed at a safe distance, so if this sight-feed caught fire it could be shut off. I don't believe you would accumulate enough holder oil or drip condensation to warrant your burning it under your boilers, but I thought possibly you might have a market for this oil that we didn't know about that was more profitable than boiler fuel. It is certainly valuable for something. It will destroy vegetation and it will kill prairie dogs; it is a good paint remover, and there are various other things that it might be used for; but it is a nuisance if you put it in the sewer. You have to get rid of it, and how are you going to do it? We have been storing it up, and when the time came that we couldn't get coal, we had a large stock on hand and burned it. I would like to ask Mr. Chubb if he has any holder oil or drip condensation, and what he does with it?

Mr. Chubb—The oil we get from our plant and street drips is allowed to settle in a barrel, and is then removed into the oil tank. I don't believe we have any oil from our holders, because we put steam on the inside of our holders all winter to keep them warm, and have not been able to discover any oil this spring on the inside of the holders.

The President—I think most of those operating water gas plants will be surprised if you take a U-pipe and pass it up under the bottom sheet of your holder, when your holder is pretty high, and pump very near the surface, or start above the surface and draw down until you get something. You will find that you have probably several inches of oil on the surface of that water. The surface oil is going to give you fine gas during warm weather at your works. It will drip out into your drips before it gets to the consumer, probably, but it may get to the nearby consumers. In the cold months that oil on the surface of the holder acts as a sponge and pulls down the luminants from your gas and impoverishes the candle power, so that it should be removed. While Mr. Chubb's method would remove it partially, and conditions remain fairly constant, I think he will find that he has some oil there, even with the steam in his holder; but if he doesn't, he must have some in the drips. I would like to ask Mr. Bertke what he does.

Mr. Bertke—We have not disturbed the oil in the holder itself. We know we have a little of it in the old holder that has been in use for 8 or 10 years, but, of course, none has accumulated in our new holder.

The President—I wish to say that if you put this oil in your separating system, as described by Mr. Bertke, it will nearly all evaporate off from the hot water, and you will have a very odoriferous gas works. If you do as Mr. Chubb does, put it in the oil tank, you will get some benefit from it; and I would say that that was the best way of disposing of it. If you only have a small quantity return it to the oil tank. But it is a nuisance if you don't do something with it. If you let it go it will get in the sewer and cause you more or less trouble; but if you put it in the oil tank and don't put any water in it at the same time, it is probably the best way of disposing of it.

Vice-President Burt assumed the Chair, and called for the

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS,

which was read by the Secretary, as follows:

Gentlemen—Your Committee on President's Address begs to commend to your serious consideration the synopsis of the valuable reports of committees on the progress of the industry, and recommends that these committees be continued and encouraged in their work. Your Committee especially recommends the addition to your standing committees of a committee on public relations, as referred to in the address.

As this Association embraces the gas companies in three different States, with divergent interests, politically and otherwise, and includes a large number of companies operating in very small towns, your Committee does not consider it advisable for this Association to take any action on the subject of a public utilities commission, and recommends leaving this to the individual action of its members.

In regard to the reference in your President's address to the matter of amalgamation, or joint meetings, between the American Gas Institute and the National Commercial Gas Association, your Committee begs to report that, upon investigating the subject, it finds that no tender of amalgamation has been made by either of these bodies, and that so many of the officers and directors of both of them are opposed to amalgamation that it is not likely that the subject will be taken up by them seriously in the near future. Therefore, your Committee deems it inadvisable for this Association to consider the subject of amalgamation between the American Gas Institute and the National Commercial Gas Association, and recommends that no action be taken thereon.

Your Committee especially commends to your consideration the valuable reference to the Illuminating Engineering Society contained in the address, and earnestly suggests that great assistance would be obtained in extending the activities of the companies you represent by developing scientific illumination with the co-operation of this Society.

Respectfully submitted,

L. L. KELLOGG,
JANSEN HAINES,
GEO. MCLEAN,
} Committee.

Upon motion, the report was accepted.

The President (resuming the chair)—The time for adjournment has come, and if there are no further committees to report or announcements to be made we will close this session. It was considered that it would be necessary te have a night session, but in view of the fact that we have progressed so well with our programme we find that it will be unnecessary. You will note that the programme calls for convening at 9 o'clock to-morrow morning instead of 10. If you will bear that in mind, I think we can get through our programme.

(To be Continued.)

When the Nuts Work Loose.

[Prepared for the JOURNAL by "R."]

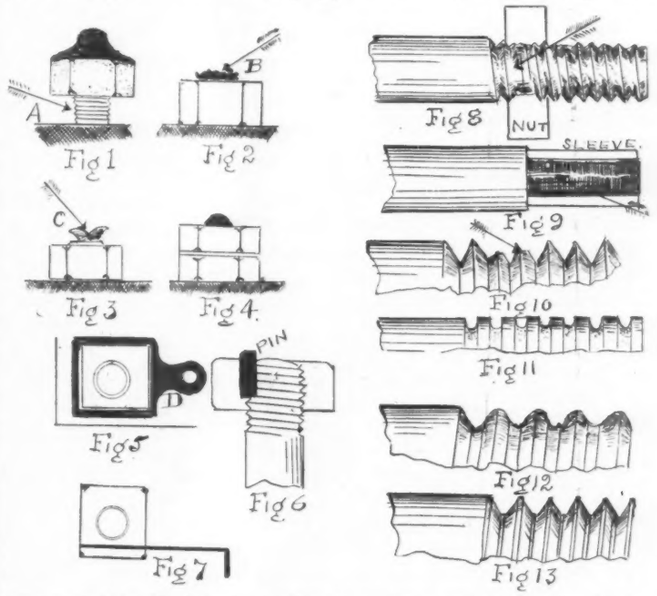
When the nuts of electrical machinery work free, permitting the fastened parts to slip, considerable annoyance, and oftentimes danger, results. The slipping of nuts on the threads of bolts and shafts has been the direct cause of many accidents, as is well known in the electrical engineering line. The fact that a single set-crew has become loose, thereby allowing some casting to slip, is often ample reason for an accident. It is true there are many ways by which the loosening of nuts can be prevented; but these methods being frequently not of a mechanical order, are not used. Still, when the machine gets into the hands of the user the chances are that the person having the device will resort to crude methods for making the nuts stay fast, although the builder of the device would seriously object to having certain crude methods employed for retaining nuts and set crews in a permanent position. The appearance of the machine might be spoiled. It is not mechanical to wind thread about the grooves of the threaded shaft and nut to make the latter stay on, neither is it proper to head up the end of the bolt, as at *B*, Fig. 2, for the sake of making an obstruction outside the nut head to prevent it from working beyond the ruptured point. However, men do these things for the sake of making nuts "stay fixed."

You can inspect electrical machinery almost anywhere and find one or more nuts jostled loose so as to expose the thread body, as at *A*, Fig. 1. The nut is tightened, only to slip again. A nut of a different gauge is tried, and perhaps the threads will bind tight enough to prevent the nut from turning off; perhaps the local machinist in his flurry will split the end of the bolt, as at *C*, Fig. 3, for such a split will so expand the shaft that the nut cannot get over. And this process ruins the shaft, for it certainly is not a mechanical way of doing things. Nevertheless, one may easily find a great many ways of like procedure in all places where electrical machinery or any other kind of machinery is used. Men will become careless when in haste. The "boss" wants the machine moving and insists that the work shall go on; but instead of taking the time to install a new shaft with a new cut thread, the workman goes on to make the old combination answer by using additional devices or by ruining other parts, as in examples 2 and 3. On the other hand, the workman may strive to avoid damaging any part and at the same time effect a remedy to the slipping nut by using a lock nut, as shown in Fig. 4. This plan can be adopted only when there is sufficient nut space for an extra one on the spindle. The original nut is turned down on the body part as hard as it can be turned without breaking the threads. Next, the second nut is then turned down hard on this first nut, the resulting locking making both nuts hold fast.

Again, we will find workmen of an ingenious turn manufacturing some sort of contrivance to key the nut, as represented by the dark portion in Fig. 5. A complete locking device is made from wrought iron and slipped over the entire nut. A pin or screw is then inserted in the hole in the device, so as to secure it to the frame of the machine next the nut. I have seen workmen drill a hole at the juncture of the nut and shaft, as at the pin position shown in Fig. 6. A pin is then driven into this hole, which holds the nut in the desired position. We also find locking devices made from pieces of steel, inserted in a groove in the nut, as in Fig. 7. The other end of the steel piece fits into a hole bored into the frame of the machine.

Oftentimes, when nuts slip because of the imperfect shake of threads, nut or shaft, odd doings are observed. In a case where the nut slipped off the shaft of an electrical machine and caused an accident before the defect was detected, because the threads of the shaft were worn, as pointed out by the arrow, Fig. 8, the threads of the shaft were worn by use, hence no positive gripping property remained. I have seen cases in which such defects were remedied by simply turning new threads on the shaft, making a smaller nut do for the reduced size of the bolt. Again, the threads may be turned off completely and a sleeve of iron welded on, as in the sectional drawing, Fig. 9. Then you can cut new threads the same size as the original threads. On examining some of the slipping combinations you may find places where the edges of the threads are worn or broken off, as shown in Fig. 10.

The next three views illustrate some of the different types of odd threadwork found in some machines. While the standard thread is preferred by machinists and users of electrical apparatus, there are occasions on which various types of threads have to be employed. The heavy, square type of thread is often found in use where severe work is required, as these threads can be cut extremely strong. The rounded type of thread is also able to resist strains, which pattern is shown in Fig. 12. The ordinary type of thread, shown in Fig. 13, is



very useful in electrical machinery unions, and is frequently employed.

The Relationship of Decoration to the Illuminating Engineering Practice.[1]

[Read by MR. C. R. CLIFFORD, before the New York Section, Illuminating Engineering Society.]

In considering the subject entrusted to me, we must concede at the outstart that the relationship, heretofore existing between engineer and decorator, has been more theoretical than practical. The illuminating engineer has been always too busy with the installation of electric plants, the illumination of mills, big department stores, institutions and public buildings, to give to the study of decoration any adequate consideration.

As a result, the illumination of the home is undertaken in a perfunctory spirit by somebody or other under the architect or decorator who fixes his outlets according to order, a mere mechanic on the job. Such a man naturally occupies a negative position.

There is a vast undeveloped field of usefulness in the illumination of the modern home and neither the architect nor the decorator is competent to conceive its possibilities.

Whatever is good in decoration springs from the consistent relationship of color and form under certain light conditions. The decorator appreciates the charm of these conditions which, for want of a better name, he calls atmosphere, and I know of no one more competent, with proper study, to create this atmosphere than the illuminating engineer. As the choice of color is guided by the conditions of light, the character of light is obviously of the utmost importance, and yet the subject is but vaguely comprehended. The technical man has given his life to economic rather than to psychological consideration. He has knowledge of power and energy, but he smiles indulgently and with smug complacency at the mere idea of æstheticism. And yet the field is broad and profitable, and it would be a great relief to the decorator to be able to give over to you the illumination responsibilities in all that the term implies.

If you are not already recognized as factors it is because you have not awakened to your great powers. And what constitutes artistic illumination? Art is simply the expression of one's belief in the beautiful. It is a nice problem to decorate in a way to give true balance, for there is always the danger of overdoing. No matter how great one's admiration for a thing, there is always a final point of satiety where the desire needs rest.

A woman may love flowers, but in the season of flowers, when all nature supplies an over-abundance and the visual sense becomes saturated and satiated, the home that is furnished in cool neutral tones is a grateful and restful retreat, a relief to the eye over-burdened with color. So with light.

In ninety-nine cases out of a hundred the decorator furnishes the

1. From the Society's "Transactions."

house and selects his colors by daylight; and in order that he may preserve the purity of the colorings by night, he is predisposed to the use of artificial white light—a continuance of daylight effects. And yet nature provides restfulness, which comes with sundown. Why not follow the work of nature and into the home at night carry the quiet and peace of eventide, to rest one from the glare of perpetual day? If you are to impart the comfort-giving, pleasure-giving qualities which impel admiration, you must grasp the subject from the decorator's standpoint and give him help. Above all else you must have imagination, the motive power of all enterprise, the impetus, the thought behind the act. In great feats of engineering, imagination is the fulcrum on which the spirit of genius is lifted to success.

The joys of the home, its ceremonial functions, its dinners and dances, even the quiet of an evening with the reading lamp, may be all enhanced or marred by your knowledge. It is not a matter of mathematics that is brought to you, it is a subject to which you must apply imagination that evokes the æsthetic sense.

Instead of height and width, length and breadth, consider occasionally the light necessary according to the individuality of the room. Consider the effects of reflection, the value of cove lighting by diffusion, the usefulness of the ceiling as a reflecting agent.

Consider the candle power for a room only after calculating the probable color treatment of the room. It is an elemental principle, for example, in house decoration, to select warm colorings for the north room on the theory that in the north room we have a natural cold light, and warm colors are preferable in the decorations. The electrician can, therefore, assume by deduction that he needs a greater amount of illumination in this north room because the warm color tones used in the decoration of this room are factors which absorb light. Consider these things: The reduction of illumination by the addition of shadow-casting furniture and light-absorbing upholsterings and curtains. The usefulness of low placed lamps for the dining room, the practicability of bookcase and closet lamps and high lamps at the bureau reflecting the image, and the blaze of light in the dressing room. The character of the drawing-room and reception-room, to which all ages and conditions of humanity have access. Independent of color, that dull and lusterless walls and velvet stuffs absorb light, while, highly finished fabrics or woodwork reflect light. The loss of illumination by reflection, and never lose sight of the fact that, while it is necessary to have sufficient light where needed, there is a danger equally serious in over-lighting and destroying the pictorial beauty of a room. The features of interest, the articles of special beauty and use your lights to accentuate their charms. That without shadow we have poor perspective. The illuminating engineer who throws light into the remotest corners destroys variety and pictorial character. The danger to good decoration is not only in over-decorating but in over-lighting. The most effective room is the room illuminated with various degrees of strength. We want shadows; we want light and shade. It is all right for the factory and showroom to have a penetrating white light that reveals every thread of the texture and preserves the integrity of every color. It is all right for the hospital and the operating table, but for universal home use, no.

And, before you have given much study to your subject, you will realize the crushing disadvantages of impracticable and insufficient outlets.

Give plenty of outlets to a room. It will add to the selling value of the house. Thousands and hundreds of thousands of dwellings are built each year on the country byways and city avenues evidently to be sold to someone who has nothing to do with their construction, and in all such buildings we find, not only a heedless regard for light, but a contempt for practicability. Fortunately we are able to meet the utilitarian problem by stringing wires to moveable lamps; but why employ the make-shift which is so obvious an attempt to correct the errors of the engineer? Consider always the character of the room and its uses. There are times when it is pleasanter that the truth should be half told, and the soft refulgent glow is better than the glare that is merciless. The home is the theater of life. Then give us the lights that make joy and peace, happiness and repose.

Go to the mimic stage and observe the great work that is done there. No longer does the orchestra give the key to the emotion. We are not aroused to an extra heart beat by the shiver-music of the strings. It is the man with the light, and why? Because the play is always seen by artificial light and whether the light simulates nature by daylight or moonlight, the colorings on the stage are so selected that they are beautiful under the lights used and are not a discordant element, a sacrifice to the demonstrations of illumination. Remember always that our social functions are at night, and even in the afternoon affairs miladi lights the candles and draws the shades; and the lights should be an effective aid to the colorings and not an influence emasculating and discordant.

All of this is known to the decorator. He perceives daily the possibilities of light, but he knows not how to obtain them, nor does he know the man who is qualified to help him. It would seem, therefore, as though the illuminating engineer should qualify as the one authority, not only upon all that pertains to the production and installation of light, but to its introduction through the medium of the chronologically accurate fixture.

The study of fixtures cannot be undertaken superficially. Immigration, commerce, the industrial arts, religion and politics have carried into the home for countless centuries what we have learned to regard as period furnishings and period styles; and to understand the periods you must comprehend not only the historical relations, politics and commerce of nations, but the progress of civilization, art and industry.

You must follow the Renaissance developments through the Louis XIV., XV., XVI. and Empire *régimes*. You must follow the inroads of the Dutch and her Flemish predecessors, the developments of the English from Henry VIII. down to George III. From the Egyptian to the Art Nouveau there is a span of 30 centuries, and to furnish the fixtures in the Elizabethan, Jacobean, Colonial, Oriental, Queen Anne and the innumerable other styles means study.

And what of the mystery of your lights? Did you ever stop to think of the psychology of light? Chromotherapy is the science based on the effect of colored lights on the human body. For years Schopenhauer, as well as Herbert Spencer, searched for an explanation of the effect of music on the emotions, and yet the effect of color upon the nerves of nervous people is more distinctly shown than the effects of music. The Dutch savant, Van Bliervliet, holds that the senses directly affected by color furnish absolute nourishment to the intellectual factors, and experiments made simultaneously upon a dozen people, chosen haphazard, showed that the most intelligent were those most easily affected by color or music. Physicians have discovered that nervous prostration may be successfully relieved by color, especially violets, blues and greens. Reds are exciting, orange and yellow stimulating.

It is well to consider that there should not only be no glare in the study to disturb one, but that a blue, green or violet light should be used. We look for the gaiety of orange, yellow and red in the drawing room. Hence the popularity of the yellow of candle light diffusing joy. It is the sunshine of night. Nature provides vast fields of green because it is favorable in its effect upon animals. Experiments showed that men of extreme sensibilities exposed to red light show excitement and increased muscular development. I commend to your study the work of the illuminating engineer employed upon the stage of the play "The Harvest Moon." If there is doubt in your mind of the psychological influence of light and of its great interest to the public, I advise you to watch this audience spellbound in its interest.

It is not the white light alone that is wanted; it is not the purity of color value that we must consider in lighting, it is first the object of the room and then the practicability of the outlets; then the influences as expressed by the volume or the color of your light. Take a lesson from the influence of light on the audience and Vavin and consider if the influences of your work may not extend beyond the purely mechanical.

The Education of Lighting Company Employees.

The *Illuminating Engineer* says that Mr. Carnegie aroused considerable discussion several years ago by publicly proclaiming his doubt as to the value of the regular college course to the young man who contemplated a business career. The fact that he had never had such advantages himself, and that, from the commercial standpoint, his own career had not been wholly devoid of success, was an example which was left to be inferred. As to the value of direct training and education for practical work of life, however, the canny Scot had no objections to offer.

The race of commercially successful ignoramuses is happily becoming more nearly extinct, and the habit of sneering at "book larnin'" and "eddication" much less noticeable. The self made man will probably always continue to worship his maker; but he is performing his worship more in accordance with the scriptural injunction, "secretly in his closet."

There is no well authenticated case on record where real knowledge has injured a man. "A little knowledge is a dangerous thing," but it is the littleness, and not the knowledge, that constitutes the danger.

It has been frequently said that the best thing about a college course is to show the recipient how little he knows; and, while the statement is a rhetorical exaggeration, it contains a foundation of truth. There is no case so absolutely hopeless as the confirmed "know-it-all." Acknowledged ignorance may be readily forgiven and in time removed, but the one who has nothing more to learn has no further mission in this world, and ought to be translated to some other sphere.

The employees of lighting companies are, on the whole, a set of ambitious, energetic, hardworking and intelligent men. Many of them have not had the advantages of technical or college training, and many of them also owe all of their practical and technical knowledge of the production and distribution of gas or electricity to their daily work with their company. Furthermore, they are young men who have yet the best years of life and work before them. To increase their knowledge of the business is to increase their value to their company, and, therefore, to themselves.

It is a mistake to suppose that they need to know only what concerns their particular department or routine. Every single detail of the business, whether commercial, technical, scientific or political, is knowledge of positive value, and the more any given employee has of it the better for himself and his employer.

Some of the larger central stations, notably the New York Edison Company, have taken this matter of education of their employees in hand and afforded them excellent opportunities for acquiring a full knowledge of the subject. We are obliged to admit that, in respect to the education of its employees, the gas interests have not been equal to the central stations.

An excellent movement is now on foot to furnish technical and other instruction to the employees of gas companies through the medium of the American Gas Institute. The Institute could not possibly undertake a more valuable and laudable purpose. The one danger to all associations of this kind is of settling down into a state of "innocuous desuetude," of eventually succumbing to dry rot. Perfunctory scientific papers, which appeal to one out of a hundred, and drag their weary way through the columns of the trade papers until they finally disappear like a ship at sea; meetings and conventions which are carried out with due pomp in the presence of empty benches, and handsomely bound "proceedings," which are well nigh ancient history by the time they appear, have some value, or at any rate are supposed to have, but it is mighty little as compared with the living, active and effective work which can be accomplished through organization by *constant personal efforts to assist those who most need assistance and in precisely the manner in which they most need it.*

The American Gas Institute has an opportunity to accomplish a very great work along this line for the gas interests, and it is exceedingly pleasing for us to witness its efforts in this direction. The National Commercial Gas Association is also working to the same general end, and we again take occasion to respectfully submit that these two separate organizations should combine and thereby more than double their strength.

Be this as it may, let each continue in the good work of educating the gas company employees to a higher condition of general knowledge, to greater enthusiasm and to loftier ideals; and, reciprocally, let the employees seize the opportunity thus afforded them for bettering their condition by joining one or both of these Associations.

Modern Gas Producers.[1]

[Abridged from a paper contributed by Herr J. Hofman, of Witkowitz, Germany, to the proceedings of the International Congress of Metallurgy, recently in Duesseldorf.]

A very marked advance was attained by the invention of the Kerpely producer with rotating grate. It was first installed at the Donawitz works, and since that time some 350 producers of this type have been placed in daily service. It is a very capacious apparatus and turns out large quantities of gas. Fig. 1 shows the construction plainly. The grate is built up on the inner edge of the pan. The lower portion of the shell is arranged for water cooling, and to this is attached a cast iron ring or cylinder, dropping down into the pan and forming the water seal. Air, moistened with steam, is furnished by a fan, and is introduced below the grate, which extends upward into the portion of the producer provided with the water cooling. The pan with the grate attached is rotated continuously by means of a motor, and any slag formed gets between the iron ring and the grates, which are placed eccentric with respect to the producer, and thus it is crushed and drops into the pan in small lumps.

The special characteristics of this producer are the water cooled lower shell, the slowly rotating eccentric grate, and the mechanical removal of the ash, no manual labor being necessary for purposes of cleaning. These producers are made with a diameter in the clear of from 7 to 10 feet, and gasify from 10 to 24 tons of anthracite per 24 hours, or from 22 to 33 tons of soft coal for the same time, depending upon the diameter of the apparatus. Even if forced the producer works well, giving a steady supply of gas, while the ash is clean, and as the rate of gasifying is good and a minimum of labor is required, the producer may be considered a good and economical one.

It is only natural that this producer, originally intended for soft coals, should undergo considerable modification, especially in the grates, when handling hard coals. Hence a number of types have been developed from the original Kerpely system. The one best known is by Rehmann, and is shown in Fig. 2. The grate here consists of several sets of perforated superposed cones. In consequence of the several points thus projecting into the incandescent fuel, this will not churn, and the ash has to slide down the conical surfaces. Moreover, the residues are loosened up somewhat, even before reach-

1. *Iron Age.*

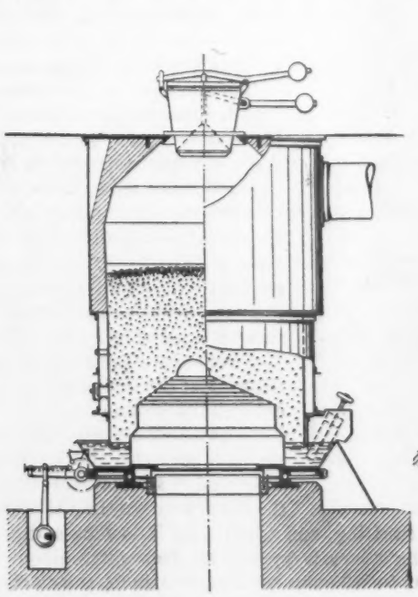


Fig. 1.—Kerpely Gas Producer with Rotating Grate.

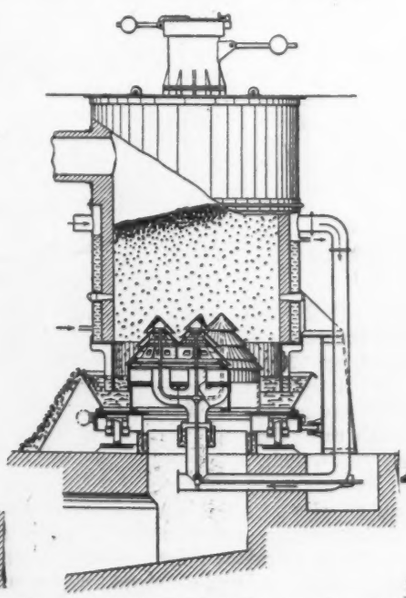


Fig. 2.—Rehmann Gas Producer with Rotating Grate.

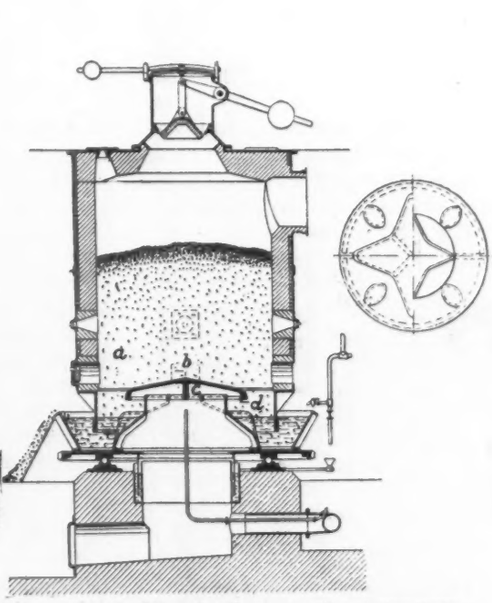


Fig. 3.—Hilger Gas Producer with Rotating Grate.

ing the cones, by reason of the revolving points. The air passages being covered are not clogged up, and as each set of cones has its own supply of steam laden air, the working of the producer stronger at either sides or center can be readily regulated. The lower portion of the apparatus consists of cast iron segments which may be removed at will, so that it is possible to take out some of the grate bars for replacement without emptying the producer. The pan revolves on wheels and not on balls, as in the case of the Kerpely producer, and this is said to prevent occasional stoppages. The deflector plate taking the ash from the pan automatically may be set high or low and thus removes the desired amount. Iron prongs are set behind this plate to catch and remove lumps of slag that may have been formed.

Another interesting modification is the Hilger producer. This is shown in Fig. 3. Here also the grate is the important point, and consists of an underframe covered by a peculiarly constructed bonnet. Between the two there is left a star-shaped aperture, opening downward, through which the steam and air mixture is let in. The grate is very low, and the projecting points catch the slag and compel the whole material at that point to rotate with the grate. Reinforcements on the grate facilitate this action.

The very latest, however, is the so-called S. F. H. producer, built by Fichet & Heurtey, of Paris, in which the slag is tapped out in a molten condition. It is a revival of the Ebmelmen idea of two generations ago; namely, that fuel should be gasified in a regular shaft furnace. After many tests a satisfactory construction was attained in the summer of 1907, since which time this type of producer has proved its value. Fig. 4 shows a section of this producer. It is very similar to a small charcoal furnace and consists of a continuous shell lined with refractory material. Provision is made for two tap holes to drain the liquid slag from the crucible of the shaft. Three to 6 water-cooled tuyeres are used and the shaft may have a hearth or not, as desired. A double bell hopper provides for charging and seals the top. A positive blower furnishes the air with pressures up to 10 pounds. The proportions of the producer are adapted to the quality of the coal to be gasified. No steam is used.

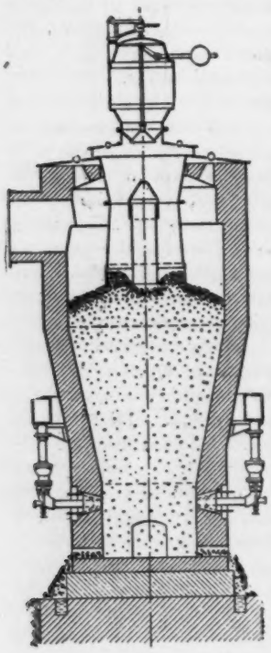


Fig. 4.—S. F. H. Gas Producer of Fichet & Heurtey.

The operation is as follows: Additions of limestone, sand or granulated blast furnace slag are made to the fuel in order to let the slag come out thinly fluid. The air forced in burns the coal to carbonic acid, which, passing through the heavy bed of fuel above, is almost completely converted to carbonic oxide. Slag is tapped off every hour or two. The temperature at the tuyeres is naturally a very high one. An interesting fact is that with oxide of iron in the ash of a coal or in the additions, this is reduced and runs off as pig iron with the slag, just as in the blast furnace. An analysis of the gas obtained with this type of producer is as follows:

	Soft Coal.	Hard Coal.	Lignite.
CO	28.3	31.0	29.5
H	7.7	6.9	6.7
CH_4	7.5	6.5	3.2
CO_2	1.4	1.0	2.5
N	55.1	55.0	58.1

The bosh of the furnace is removed every three months; the lining above lasts several years. At Gironcourt 6 of these producers have been working for three years, using fuel with the ash content 37.44, carbon 44.41 and water 10. The advantages of the S. F. H. system seem to be the small first cost; low maintenance expense, having no complicated grates; the making of dry gas, not requiring steam; the use of high blast pressure, which gasifies dusty and low grade fuels, and finally, low operating cost.

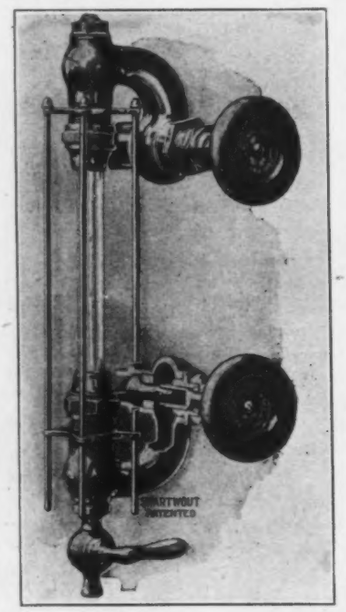
Gas Producer Practice at Witkowitz.—Mr. Hofman concludes his interesting paper with a few general remarks on the subject of running gas producers. Ever since 1879 the Witkowitz Works have used limestone additions to the fuel in their gas making practice. It seems that the distribution of this material keeps the coking of the coal in better shape, prevents grate clinkers and prevents those which do form from sticking to the wall of the producer. Furthermore, the driving off of the carbonic acid gas from the limestone, with the subsequent change to carbonic oxide, increases the output of gas. In his opinion the formation of the proper slag in the gas producer is just as important as it is in the blast furnace, for there are very few fuels which will run themselves without attention when handled by the rotating grate type of producer, where the slag or clinkers must be friable.

A further important point is the quality of the steam blown into the air. This is seldom as it should be, on account of the distance of the boilers from the gas plant. As a consequence, there is too great a proportion of water introduced with cooling effects in the producer rendering the formation of carbonic oxide incomplete. The presence of 13 grains of water in the cubic foot of producer gas is fatal in the making of quality steel in the open hearth furnace. It is, therefore, advisable to superheat the steam before allowing it to mingle with the air in the producer as this is blown in. As an example of the value of this practice, it may be stated that of two producers running side by side, of identical make and construction, one using plain steam and the other receiving it superheated, the former always gave the poorer gas as well as gasified less fuel.

The importance of the new development of the producer industry cannot be overestimated in connection with the use of poor grade fuels. With high pressure blast it is possible to use up the immense breeze piles of coke economically; indeed, one large works in Europe is now about doing this. Furthermore, in winning coal, it will not be necessary to reject the poorer grades as absolutely unfit for the market, and hence slaty fuels need not be thrown away where they cannot be washed clean enough ordinarily. The application of gas thus made under boilers is self-evident, and when it is considered that fuels with 65 per cent. ash, 20 per cent. carbon and 15 per cent. volatile matter are regularly used at the works of Comp. des Mines Blanzy in Montceau des Mines, for all purposes through the gas made from them, the field for utilizing waste material has been widely extended, and so far as waste fuels are concerned this problem has been practically solved. Time will show a great development of producers along the shaft furnace type, and the natural outcome will be the erection of central stations for generating current for long distance transmission.

The Swartwout Automatic Safety Valve.

A useful and, our informant adds, "a strikingly reliable instrument," is the "Swartwout Automatic Safety Water Gauge," that is being made by the Ohio Blower Company, and which is well outlined in the illustration herewith. The employment of the gooseneck construction is a prominent feature, and another is the principal application of the automatic valve fitted with removable case. With the gooseneck type of construction the gauge glass is offset from the gauge bodies so that the glass may be cleaned, replaced, or blown out without in any way disturbing the gauge bodies or the valves. Goosenecks also permit a glass 2 to 4 inches longer than other forms, an important feature when the glass is 25 or 30 feet above the ground. To operate a gauge glass and keep it in good condition is extremely easy. The glass is cleaned by removing the plug at the top or the drain cock at the bottom and inserting a swab; the glass need not be removed nor the packing disturbed. In blowing down the water column the valves do not, it is stated, require resetting, and every time it is blown down the exact condition of the valves is apparent. The water gauge is made to stand pressure up to 250 pounds per square inch, thus adapting them to all types of boilers and all kinds of service.



Street Lighting an Advertising Asset.

By Mr. Wm. F. Weadley.

We always knew that Mr. Weadley had many strings in his harp that he successfully twanged, and that his crib was usually filled with corn. We did not know, however, that he was an author, but this "brochure," published in the last issue of "The Gasarc," proves that even in this high order he is a "best seller."

About 7 years ago the Business Men's Association, of a street several miles from the heart of a large city, concluded something must be done to awaken the residents of the locality to the fact that they need not go to the city's center, 5 miles away, to shop, that the same variety of goods was on sale in their own shopping district. How to do this most effectively was the question. After many schemes were talked over, one genius, as if by inspiration, suggested a week's "Carnival of Light." The idea met with almost instant approval, and they certainly made it a "Carnival of Light." Festoons of incandescent lamps canopied the street—daylight was put to shame—and North avenue, Chicago, 5 miles from the city's center, was the talk of the town for a week; but for a week only, for while the street was crowded with people that week, and the merchants were happy in their increased business, happy to see faces of people hitherto unknown to them, yet the reaction was inevitable.

They had rioted in light, they had adopted the spectacular circus tactics, and, naturally, got circus results. It was a wonderful week, but we all know what a sad, desolate spot a circus lot looks like the day after the show.

We, who were watching the demonstration, felt it was up to us to endeavor to show them where they had blundered. We showed them how they had gone into the matter in a theatrical way, and, of course, got only theatrical results. We showed them their scheme of lighting lacked dignity, lacked permanency, and that the cost was too high for results obtained. We showed them it was the light itself that drew the people, and in order to raise the standard of their street they must adopt a sensible, dignified method; the cost must be fair so that it would not offset the good accomplished; it must be effective and permanent. We proved to them that, for a trifle more than the cost of the week's Carnival, we could give them an all-the-year-round scheme of lighting superior to that of the Carnival.

We placed Humphrey gas arc lamps equal distances for one solid mile in that street, and to-day, 7 years later, that same plan of lighting is persisted in, and, in fact, has become the rule wherever at least merchants have tested its value, and as to its value, it has no stronger champions than those who tried it for years.

In the same city, a little over a year ago, a novel idea was tried out. An exhibition was given in a hall located rather out of the business district. The managers arranged to place gas arc lamps every 50 feet from each transportation company's lines to the hall, the idea being that the crowd would follow the light. They certainly did follow the light, because the management was forced to shut the doors on from 5,000 to 10,000 people every night during that show. I cite these instances to prove that the public appreciate a well lighted street and will frequent that street to the desertion of a poorly lighted locality.

Why is it that certain streets in large cities are practically deserted after nightfall—good streets, too—thoroughfares in the daytime? Poor light is the answer. Who wishes to stumble along a dark deserted street at night, no matter how clean and prominent that street may be in daylight.

Everything is good, or bad, purely by comparison. We unconsciously set a standard and, as things are better or worse than that standard, so we unconsciously set a value on them. So with our towns and our streets. We complain about conditions, because we have a standard and our city and street fall below that standard.

Now nothing else in the world is so cheap to-day for bettering conditions or bettering the appearance of our cities, than light and plenty of it. Crime cannot exist where the light shines brightly, undesirables cannot mingle with us, the rowdy must "straighten-up" when his every move is apparent to all about him, the citizen and customer are protected, the unattended woman continually safeguarded. And light makes a cheerful, happy throng, and happy people are good spenders.

Have you carefully considered the many people who find it impossible to visit your stores during the daytime, and who would welcome, indeed, a bright, clean, cheerful looking street where they might walk in the evening with comfort and pleasure to see the many good things your stores have to offer them.

You may say you light your windows—that is not sufficient. A well lighted window all the time is now considered good business by all shrewd merchants; but please remember, you must get the people on the streets before they can look into your windows. Remember, gentlemen, that the reason street lighting is becoming so popular is because it pays. Don't think it merely the endeavor of your public service companies to get a little more of your money. Their interests and yours are one—in order to induce you to light your streets they must increase your business, your profits; and it is because the plan does increase your business and does bring you greater profits that it is sound and businesslike. I visit quite a number of the cities of the country, and have seen towns change from dingy, dark, unattractive places to towns of life and activity, and the greatest and most essential agent toward that betterment was invariably more light.

Read the daily papers, the active, boosting journals, and you will find them continually, persistently advising their business committees to light up. Broadway minus its lights would not be "The Great White Way," and if the business men of so prominent a thoroughfare find it "good business" to keep that street brilliantly lighted, how much more necessary is it for you to do likewise to keep your community from spending its money elsewhere. It pays. It is purely a business proposition, and you should give it a businesslike consideration.

Items of Interest
FROM VARIOUS LOCALITIES.

The special franchise asked for by the Nebraska City (Neb.) Gas Company, whereunder its corporate life will be extended for a period of 20 years, will be voted for at a special election, called for the last Tuesday in the current month.

At the annual meeting of the shareholders in the Equitable Illuminating Gas Light Company, held in Philadelphia some days ago, no change was made in the executive management.

Mr. C. W. Hooven, Receiver for the Union Gas Light and Fuel Company, of Anderson, Ind., is authority for the statement that an additional supply of gas (heretofore the Company has furnished natural gas only) will be insured through the creation there of an artificial gas plant, to be constructed between now and December 1.

An interesting suit is on in a local Detroit court, before Justice Lemkle. One Louis Milstein rented a house from Anne Herchens. On entering the premises he smelled gas, hunted for the leak, and found it—of course, in the usual way. The resultant explosion damaged the house and upset Milstein so badly that he was immured in bed for 3 weeks. On his getting out he instituted proceedings against the landlord for damages, averring that it was defendant's duty to see to it that all connected with the gas supply was in proper order, dwelling especially on the fact that it was essential that all the burners should have been shut off - the escape was traced to a turned-on tap. The Judge promised to render a decision the 16th inst.

W. P. Bayer, writing from Missoula, Mont., under date of the 30th ult., informs us that the work of putting down the mains in connection with the proposed coke and gas plant for Billings, Mont., which project is being exploited by Dr. Carl Schrater and associates, will be commenced in a fortnight or so, local capitalists having subscribed the $50,000 which the Doctor insisted should be so taken out of the estimated total of $200,000, which it was estimated would be necessary to carry the thing to a finality.

Mr. Henry Nelson, who did excellent work as official "trouble dissipator" for the Oklahoma City (Okla.) Gas and Electric Company, resigned that post, at the close of July, to join the force of the Oklahoma Natural Gas Company.

The reduction in the selling rate (5 cents per 1,000 cubic feet), recently announced to the residents by the Gas Company of Montgomery county, Pa., takes effect the 1st prox.

The proprietors of the Norfolk and Bristol (Mass.) Gas and Electric Company have petitioned the authorities of the town of Mansfield for the right to open the streets thereof for the purpose of putting in a system of gas mains. Mr. W. H. Fritchman is concerned in this.

THE owners of the Defiance (O.) Gas and Electric Company are putting their house in order for the heavy demands of 1910, the principal activity in this regard being in respect of the main system.

MR. J. J. NEWITT has resigned from the service of the Beatrice (Neb.) Gas Company, to assume a responsible position on the forces of Mr. M. B. Daly, in Cleveland, O. His successor is Mr. Thomas Rice, of Brandon, Manitoba.

THE betterments on the Dalton (Ga.) gas plant will take up the best part of $5,000.

A REORGANIZATION of the Freeport (Ills.) Gas Light and Coke Company is under consideration, which will be greatly assisted through the thoroughly complete appraisal of the property recently made by Mr. Henry I. Lea, the well-known and much liked ex-Secretary of the Michigan Gas Association. Mr. Lea has quite a lot of other good work on hand in his Chicago headquarters.

MR. CHARLES D. SLIMPIN, Manager of the Du Quoin (Ills.) Light, Heat and Power Company, reports that the works and piping system are at last showing the good effects of their recent overhauling, which work it was possible to do through the common-sense activities of the gentlemen who purchased that plant some time ago. Mr. Slimpin showed them about what was needed, and named the probable cost thereof, which findings were acquiesced in by the owners and made usable through their prompt putting up the required funds.

THE franchises and in fact all the belongings of the Columbia (Pa.) Gas Company, have been purchased by the Lancaster Railway and Light Company, of Lancaster, Pa. Mr. C. Edgar Titzel, Manager of the Conestoga Traction Company, which is also controlled by the Lancaster concern, has been elected President of the Columbia corporation.

A CORRESPONDENT in Boston, writing under date of the 4th inst., incloses the following from a recent issue of the Lowell (Mass.) *Citizen*: "While the State Commission on the cost of living in Massachusetts is about to publish a voluminous report on the various causes which it considers have helped to increase the living costs, it especially exempts gas and electric light suppliers from any such charge. Here is what is said: 'Gas and electric light have not been factors in the increased cost of living. The price of gas has steadily decreased during the last two decades. The decline in the price of electricity began later, because the industry was developed later, but the decline in the last 10 years is even more marked than in the case of gas. The average price of gas for the State in 1890 was $1.46 per 1,000 feet; in 1909, it was $0.914. The average price of electric light in 1890 for the cities of Massachusetts was about 25 cents per kilowatt hour, the average price in 1910 is about 13 cents. Moreover, the invention of mantles and the improvement in incandescent lamps have greatly increased the candle power of both, so that much less gas or electric current is necessary to secure a given amount of light. Most of the saving thus secured has accrued to the consumer, but to offset this there has been a disposition to extend the application of gas and electric light to new uses, so that the total amount consumed has increased much more rapidly than the population. The only figures available show that in 1890 there were 104,000 gas meters in the State and 44,158 in Boston; and in 1909, 411,463 and 121,734, respectively. The use of gas has become more general among persons of very moderate means. People are beginning to use it for heating and cooking and also for engines. Massachusetts has lagged behind the rest of the country in extending the uses of gas, but to-day there is a gas stove for every other consumer in the city of Fall River. This case is exceptional, but it demonstrates the possibilities. Under some conditions gas stoves are more economical than coal stoves, and careful study by householders of this, as of other questions of household economy, may result in savings. Indirectly, the cost of living is affected by the increased brilliancy of our stores and streets. The greater outlay for lighting must eventually be expressed in the prices of the commodities sold, although the amount is almost a neglible quantity, and may be offset by the increased volume of business it attracts. The increased volume of business tends to keep the prices low, and this, with the other causes for declining prices, still operative makes it possible to say, with the State Board of Gas and Electric Light Commission, that further reductions may be made, we have no reason to doubt.'"

MR. J. C. KEEPERS has resigned the post of Manager to the Olathe (Kas.) Gas Company.

THE proprietors of the Haverhill (Mass.) Gas Light Company will extend its main system to the outlying section known as Merrimac. The Company has guarantees from 150 residents of the place that they will use gas, and it is strange, to say the least, that this connection was not established long ago, since the Haverhill mains are at present, and have been for some time, in the streets of the section known as Newton road and Sanders' Hill.

THE City Council of Shelbyville, Ills., has granted the petition of two local capitalists (Messrs. Oscar L. Lewis and "Joe" Young), for the right to operate a gas plant there. The right is to be operative for 20 years, and a maximum rate of $1.50 per 1,000 cubic feet may be obtained. Work on the plant is to be begun within 60 days (franchise is dated the 2d inst.), and gas is to be turned on within 9 months. The town of Shelbyville is now operating an electric lighting plant on municipal account.

GENERAL MANAGER GEORGE H. WARING, of the Consolidated Railway and Lighting Company, Charleston, S. C., declares that the new gas plant to be constructed there will be ready for operation by January 1st. And if he makes this promise good he will certainly have abundant cause for congratulation, as much work will have to be done. The planning, amongst other things, includes the constructing of a new storage holder.

MR. LOOMIS, formerly known in this section as an exploiter of gas works, is said to be in Waycross, Ga., where he proposes to give the residents an ample supply of gas of the wood variety. Incidentally, he was some months (in fact, many months) ago concerned in the construction of a gas plant at Butler, N. J., in which particular place he favored producer gas. Of his many meanderings we have told much.

THE Gas Machinery Company, of Cleveland, O., has been awarded the contract for installing a 9-foot water gas set in the works of the Citizens Gas and Fuel Company, of Terre Haute, Ind. The apparatus is to be a duplicate of that installed by the same contractors a few years ago, and completes the construction of the Citizens works as originally planned.

THE Springfield (Mass.) "Republican" is our authority for the statement that the Company has commissioned its engineer, Mr. Herman Burgi, to construct for it a good working example of the Glover-West type of vertical retorts. It may be remembered that Mr. Burgi visited Europe some months ago, the main object of his visit having been to inspect the best known foreign types of this example of construction.

THE Board of Gas and Electric Light Commissioners has approved the petition of the Marlboro-Hudson (Mass.) Gas Company for the right to make an issue of capital stock aggregating $180,000. The proceeds are to be devoted to taking up outstanding notes.

THE Rogue River Valley Gas Company has been incorporated to manufacture and supply gas to the residents of the named district of Oregon. It is capitalized in $300,000, and some of those interested in it are Messrs. J. R. Anderson, L. E. Wakeman and J. C. Brown. Mr. Porter J. Neff is the Company's attorney.

THE city's share (6½ per cent.) of the gross earnings of the Cleveland Gas Light and Coke Company and the Peoples Gas Light and Coke Company, for the 6 months ended June 30, amounted to $22,811.65.

THE increase (on a percentage basis) in gross income of the Western United Gas and Electric Company, for the first quarter of this year—the figures were made public some days ago—was 9.62.

THE special election called by the authorities of Nebraska City (Neb.) for the purpose of determining whether or not the franchise extending the corporate life of the Nebraska City Gas Company for 20 years should pass, seems a farcical proposition, in that the vote in favor is likely to be unanimous. In any event, the polling is to occur the 20th inst.

MR. THOMAS RICE, formerly Superintendent, Brandon (Manitoba) Gas and Power Company, has been promoted to the position of General Manager of the Gage County Gas Light and Power Company, of Beatrice, Neb., vice Mr. J. J. Newitt, whose promotion to the service of the M. B. Daly combination in Cleveland is elsewhere noted in these columns. By-the-way, when Mr. Daly and his associates get through with Mister Marks and his "estimates," will cause the latter perhaps to reach the possible state of "taking notice!"

The Market for Gas Securities.

The net gain in the trading in Consolidated during the week amounts to 1¼ per cent., which, of course, carries the dividend of 1 per cent. for the quarter. One would naturally suppose that the dastardly attack on the Mayor's life, the action of whose office is so closely identified with city corporate life, would cause a flurry or decline in shares of the nature of Consolidated. And in this instance especially so, since the interim Mayor is known to be of the "Peepul's" sort. However, a reverse is the case, for we have an increase instead of a decline. No; to affect gas shares we seemingly must have an injunction or something else that affects railroad rates or operation between Jump-On and Jump-Off.

The general market for gas shares is strong, as a rule, with good inquiry for bonds.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

AUGUST 15.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$73,177,000	100	128¼	129
Central Union Gas Co.—1st 5's, due 1972, J. & J.	3,000,000	1,000	98	101
Equitable Gas Light Co.—Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.—1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98¼	100¼
New York and East River—1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	132	132½
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¼	107
Yonkers	999,650	509	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	⅜	⅝
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	509,000	1,000	90	96
Boston United Gas Co.—1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	73	73½
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90¼	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	106½	—
Mortgages, 6's	3,600,000	-	80	100
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	50
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,235,000	1,000	104¾	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	103	103½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	102	102½
Preferred	2,500,000	100	90	100
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	106¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	80	80⅝
Preferred	25,000,000	100	91½	92
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	105⅝	105½
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—1st Mtg. 5's	751,000	1,000	100	102
Washington (D. C.) Gas Co.	1,800,000	200	375	380
1st Mortgage, 6's	600,000	—	—	—

Advertisers' Index.

New advertising, or changes in standing ads., to assure attention the issue following their reception, must be in hand on Wednesday.

AMMONIA CONCENTRATORS.
Bartlett-Hayward Co., Baltimore, Md. 329
Fred Bredel Co., Milwaukee, Wis. 324
Michigan Ammonia Works, Detroit, Mich. 306
The Gas Machinery Co., Cleveland, O. 311
Western Gas Construction Co., Fort Wayne, Ind. 336

BURNERS.
Wm. M. Crane Co., New York City 320

CEMENTS AND CONCRETES.
C. L. Gerould, New Castle, Pa. 324
Ernst Strassburger, Chicago, Ills. 326
Glidden Varnish Co., Cleveland, O. 306
Laclede-Christy Clay Products Co., St. Louis, Mo. 314

CHARGING BARROWS & COAL WAGONS.
Davis & Farnum Mfg. Co., Waltham, Mass. 328
Kerr Murray Mfg. Co., Fort Wayne, Ind. 331
The Stacey Mfg. Co., Cincinnati, O. 332

COKE CRUSHERS.
Bartlett-Hayward Co., Baltimore, Md. 329
C. M. Keller, Columbus, Ind. 327

CONVEYORS—ALL KINDS.
Bartlett-Hayward Co., Baltimore, Md. 329
Brown Hoisting Machinery Co., Cleveland, O. 314
Cruse-Kemper Co., Ambler, Pa. 316
C. W. Hunt Company, New York City 318
Fred Bredel Co., Milwaukee, Wis. 326
G. A. Bronder, New York City 325
Kerr Murray Mfg. Co., Fort Wayne, Ind. 331
The Gas Machinery Co., Cleveland, O. 311
The Stacey Mfg. Co., Cincinnati, O. 331
Western Gas Construction Co., Fort Wayne, Ind. 336

EXHAUSTERS.
Connelly Iron Sponge & Governor Co., New York City 325
Connersville Blower Company, Connersville, Ind. 332
Davis & Farnum Mfg. Co., Waltham, Mass. 328
Isbell-Porter Company, Newark, N. J. 315
Kerr Murray Mfg. Co., Fort Wayne, Ind. 331
Piqua Blower Co., Piqua, O. 317
The P. H. & F. M. Roots Co., Connersville, Ind. 319

GAS AND WATER PIPES.
Davis & Farnum Mfg. Co., Waltham, Mass. 328
Donaldson Iron Co., Emaus, Pa 320
R. D. Wood & Co., Philadelphia, Pa. 334

GAS BLAST FURNACES.
American Gas Furnace Co., New York City 312

GAS COALS.
Berwind-White Coal Mining Co., New York and Phila. 326
Westmoreland Gas Coal Co., Philadelphia, Pa. 327

GAS COCKS.
H. Mueller Manufacturing Co., Decatur, Ills. 321

GAS ENGINEERS.
Bartlett-Hayward Co., Baltimore, Md. 329
Cruse-Kemper Co., Ambler, Pa. 316
Davis & Farnum Mfg. Co., Waltham, Mass. 328
Drakes Limited, Halifax, England. 307
Edwin E. Witherby, New York City. 306
Evens & Howard Firebrick Co., St. Louis, Mo. 263
Frank D. Moses, Trenton, N. J. 2:2
Fred Bredel Co., Milwaukee, Wis. 326
Frederick J. Mayer, New York City 324
Glenn Marston, New York City 306
Henry I. Lea, Chicago, Ills. 328
H. M. Byllesby & Co., Chicago, Ills. 323
H. Thurston Owens, New York City 306
Humphreys & Glasgow, New York City 328
Improved Equipment Company, New York City 309
Isbell-Porter Co., Newark, N. J. 315
Kerr Murray Mfg. Co., Fort Wayne, Ind. 331
Laclede-Christy Clay Products Co., St. Louis, Mo. 314
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. 324
Quintard Iron Works, New York City 317
R. D. Wood & Co., Philadelphia, Pa. 324
The Gas Machinery Co., Cleveland, O. 311
The Stacey Mfg. Co., Cincinnati, O. 331
The United Gas Improvement Co., Philadelphia, Pa. 332
Western Gas Construction Co., Fort Wayne, Ind. 336
William A. Baehr, Chicago, Ills. 306
William W. Randolph, New York City 321

GAS ENRICHERS.
Standard Oil Co., New York City 327

GAS GAUGES.
The Bristol Co., Waterbury, Conn. 310

GAS GOVERNORS.
Chaplin-Fulton Mfg. Co., Pittsburg, Pa. 325
Connelly Iron Sponge & Governor Co., New York City. 325
Evens & Howard Firebrick Co., St. Louis, Mo. 263
Isbell-Porter Co., Newark, N. J. 315
Pittsburg Meter Co., East Pittsburg, Pa. 318
Reynolds Gas Regulator Co., Anderson, Ind. 335

GASHOLDERS.
Bartlett-Hayward Co., Baltimore, Md. 329
Chicago Bridge and Iron Works, Chicago, Ills. 310
Cruse-Kemper Co., Ambler, Pa. 316
Davis & Farnum Mfg. Co., Waltham, Mass. 328
Deily & Fowler Mfg. Co., Philadelphia, Pa. 332
Kerr Murray Mfg. Co., Fort Wayne, Ind. 331
R. D. Wood & Co., Philadelphia, Pa. 334
Riter-Conley Mfg. Co., Pittsburgh, Pa. 308
The Stacey Mfg. Co., Cincinnati, O. 330
Western Gas Construction Co., Fort Wayne, Ind. 336

GAS MAIN STOPPERS.
Safety Gas Main Stopper Co., New York City 327

GAS METER CONNECTIONS.
H. Mueller Manufacturing Co., Decatur, Ills. 321

GAS METERS.
American Meter Co., New York and Philadelphia. 335
D. McDonald & Co., Albany, N. Y. 333
Helme & McIlhenny, Philadelphia, Pa. 335
John J. Griffin & Co., Philadelphia, Pa. 332
Keystone Meter Co., Royersford, Pa. 334
Maryland Meter and Mfg. Co., Baltimore, Md. 334
Metric Metal Co., Erie, Pa. 335
Nathaniel Tufts Meter Co., Boston, Mass. 334
New York Improved Meter Co., New York City. 318
Pittsburg Meter Co., East Pittsburg, Pa. 318
Rotary Meter Co., New York City. 333
Sprague Meter Co., Bridgeport, Conn. 333

GAS PLANT TOOLS.
H. Mueller Manufacturing Co., Decatur, Ills. 321

GAS STOVES.
American Meter Co., New York and Philadelphia. 335
Keystone Meter Co., Royersford, Pa. 334
Maryland Meter & Manufacturing Co., Baltimore, Md. 334
Nathaniel Tufts Meter Co., Boston, Mass. 334

GAS TAPPING MACHINES.
George Light, Dayton, O. 327
H. Mueller Manufacturing Co., Decatur, Ills. 321

GAS WORKS APPARATUS AND CONSTRUCTION.
Bartlett-Hayward Co., Baltimore, Md. 329
Connelly Iron Sponge & Governor New Co., York City. 325
Cruse-Kemper Co., Ambler, Pa. 326
Davis & Farnum Mfg. Co., Waltham, Mass. 328
Deily & Fowler Mfg. Co., Philadelphia, Pa. 319
Evens & Howard Firebrick Co., St. Louis, Mo. 263
Fred Bredel Co., Milwaukee, Wis. 326
Gas Engineering Co., Trenton, N. J. 272
Humphreys & Glasgow, New York City 316
Improved Equipment Company, New York City 309
Isbell-Porter Co., New York City 315
Kerr Murray Mfg. Co., Fort Wayne, Ind. 322
Laclede-Christy Clay Products Co., St. Louis, Mo. 314
Lloyd Construction Co., Detroit, Mich. 312
Quintard Iron Works Co., New York City 317
R. D. Wood & Co., Philadelphia, Pa. 334
Riter-Conley Mfg. Co., Pittsburgh, Pa. 308
The Gas Machinery Co., Cleveland, O. 311
The Stacey Mfg. Co., Cincinnati, O. 331
The United Gas Improvement Co., Philadelphia, Pa. 303
Western Gas Construction Co., Fort Wayne, Ind. 336

HIGH PRESSURE GAS GOODS.

H. Mueller Manufacturing Co., Decatur, Ills.... 321

HOT WATER HEATERS.

Humphrey Co., Kalamazoo, Mich.... 312

INCANDESCENT GAS LAMPS.

General Gas Light Co., Kalamazoo, Mich.... 313
Welsbach Company, Gloucester, N. J.... 322

INCLINED RETORTS.

Baltimore Retort and Firebrick Co., Baltimore, Md... 324
Didier-March Co., New York City.... 330
Evens & Howard Firebrick Co., St. Louis, Mo.... 263
Fred Bredel Co., Milwaukee, Wis.... 326
Gas Bench Construction Co., St. Louis, Mo.... 327
Improved Equipment Company, New York City.... 309
Laclede-Christy Clay Products Co., St. Louis, Mo.... 314
Parker-Russell Mining and Mfg. Co., St. Louis, Mo... 324

MAIN AND SERVICE LAYING.

Sullivan Bros., Flushing, N. Y.... 327

PATENTS, TRADE-MARKS & COPYRIGHTS

Royal E. Burnham, Washington, D. C.... 334

PIPE LINE TOOLS.

H. Mueller Manufacturing Co., Decatur, Ills.... 321

PREPAYMENT METER ATTACHMENTS.

New York Improved Meter Co., New York City.... 327

PREPAYMENT METERS.

American Meter Co., New York and Philadelphia.... 335
D. McDonald & Co., Albany, N. Y.... 333
Helme & McIlhenny, Philadelphia, Pa.... 335
John J. Griffin & Co., Philadelphia, Pa.... 283
Keystone Meter Co., Royersford, Pa.... 334
Nathaniel Tufts Meter Co., Boston, Mass.... 334
New York Improved Meter Co. New York City.... 334
Pittsburg Meter Co., East Pittsburg, Pa.... 318
Sprague Meter Co., Bridgeport, Conn.... 333

PROCESSES.

Bartlett-Hayward Co., Baltimore, Md.... 329
Fred Bredel Co., Milwaukee, Wis.... 326
Humphreys & Glasgow, New York City.... 328
Improved Equipment Company, New York City.... 309
The Gas Machinery Co., Cleveland, O.... 311
The United Gas Improvement Co., Philadelphia, Pa... 323
Western Gas Construction Co., Fort Wayne, Ind.... 336

PRODUCER POWER PLANTS.

R. D. Wood & Co., Philadelphia, Pa.... 334

PURIFIER AND SCRUBBER TRAYS.

Bartlett-Hayward Co., Baltimore, Md.... 329
Cabot Mfg. Co., Hoboken, N. J.... 327
Western Gas Construction Co., Fort Wayne, Ind.... 336

PURIFIERS.

Bartlett-Hayward & Co., Baltimore, Md.... 329
Connelly Iron Sponge & Governor Co., New York City. 325
Cruse-Kemper Co., Amler, Pa.... 316
Davis & Farnum Mfg. Co., Waltham, Mass.... 328
Evens & Howard Firebrick Co., St. Louis, Mo.... 263
Isbell-Porter Co., Newark, N. J.... 315
Kerr Murray Mfg. Co., Fort Wayne, Ind.... 331
Quintard Iron Works, New York City.... 317
R. D. Wood & Co., Philadelphia, Pa.... 334
The Stacey Mfg. Co., Cincinnati, O.... 331
The United Gas Improvement Co., Philadelphia, Pa... 323
Western Gas Construction Co., Fort Wayne, Ind.... 336

PURIFYING MATERIALS.

Connelly Iron Sponge & Governor Co., New York City 325
The United Gas Improvement Co., Philadelphia, Pa... 323

REGENERATIVE FURNACES.

Baltimore Retort and Firebrick Co., Baltimore, Md.. 324
Bartlett, Hayward & Co., Baltimore, Md.... 329
Didier-March Co., New York City.... 330
Evens & Howard Firebrick Co., St. Louis, Mo.... 263
Fred Bredel Co., Milwaukee, Wis.... 326
Gas Bench Construction Co., St. Louis, Mo.... 317
Improved Equipment Company, New York City.... 309
J. H. Gautier & Co., Jersey City, N. J.... 324
Laclede-Christy Clay Products Co., St. Louis, Mo.... 314
Missouri Firebrick Co., St. Louis, Mo.... 324
Parker-Russell Mining and Mfg. Co., St. Louis, Mo... 324

RETORTS AND FIREBRICKS.

Baltimore Retort and Firebrick Co., Baltimore, Md... 324
Didier-March Co., New York City.... 330
Evens & Howard Firebrick Co., St. Louis, Mo.... 263
Fred Bredel Co., Milwaukee, Wis.... 326
Gas Bench Construction Co., St. Louis, Mo.... 317
Henry Maurer & Son, New York City.... 317
Improved Equipment Company, New York City.... 309
James Gardner, Jr., Co., Bolivar, Pa.... 322
J. H. Gautier & Co., Jersey City, N. J.... 324
Laclede-Christy Clay Products Co., St. Louis, Mo.... 314
Missouri Firebrick Co., St. Louis, Mo.... 324
Parker-Russell Mining and Mfg. Co., St. Louis, Mo.... 324

SCRUBBERS AND CONDENSERS.

Bartlett-Hayward Co., Baltimore, Md.... 329
Cruse-Kemper Co., Amler, Pa.... 316
Davis & Farnum Mfg. Co., Waltham, Mass.... 328
Evens & Howard Firebrick Co., St. Louis, Mo.... 263
Fred Bredel Co., Milwaukee, Wis.... 326
Isbell-Porter Co., Newark, N. J.... 315
Kerr Murray Mfg. Co., Fort Wayne, Ind.... 331
Quintard Iron Works, New York City.... 317
R. D. Wood & Co., Philadelphia, Pa.... 334
Riter-Conley Mfg. Co., Pittsburgh, Pa.... 308
The Gas Machinery Co., Cleveland, O.... 311
The Stacey Mfg. Co., Cincinnati, O.... 331
The United Gas Improvement Co., Philadelphia, Pa... 323
Western Gas Construction Co., Fort Wayne, Ind.... 336

SELF-SEALING MOUTHPIECE DOORS.

Bartlett-Hayward Co., Baltimore, Md.... 329
Davis & Farnum Mfg. Co., Waltham, Mass.... 328
Fred Bredel Co., Milwaukee, Wis.... 326
Isbell-Porter Co., Newark, N. J.... 315
Improved Equipment Company, New York City.... 309
Kerr Murray Mfg. Co., Fort Wayne, Ind.... 331
Parker-Russell Mining and Mfg. Co., St. Louis, Mo.... 324
Quintard Iron Works, New York City.... 317
R. D. Wood & Co., Philadelphia, Pa.... 334
The Gas Machinery Co., Cleveland, O.... 311
The Stacey Mfg. Co., Cincinnati, O.... 331
Western Gas Construction Co., Fort Wayne, Ind.... 336

STOKING MACHINERY.

Fred Bredel Co., Milwaukee, Wis.... 326
G. A. Bronder, New York City.... 325
Laclede-Christy Clay Products Co., St. Louis, Mo.... 314
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. ... 324

STORAGE TANKS.

Bartlett-Hayward Co., Baltimore, Md.... 329
Davis & Farnum Mfg. Co., Waltham, Mass.... 328
Quintard Iron Works, New York City.... 317
The Stacey Mfg. Co., Cincinnati, O.... 331
Western Gas Construction Co., Fort Wayne, Ind.... 336

STREET LAMPS.

Thos. T. W. Miner, New York City.... 307
Welsbach Street Lighting Co., New York and Phila.. 322

TAR AND CARBONIC ACID EXTRACTOR.

Bartlett-Hayward Co., Baltimore, Md.... 329
Fred Bredel Co., Milwaukee, Wis.... 326
Isbell-Porter Co., Newark, N. J.... 315
Kerr Murray Mfg. Co., Fort Wayne, Ind.... 331
The Gas Machinery Co., Cleveland, O.... 311
The Stacey Mfg. Co., Cincinnati, O.... 331
The United Gas Improvement Co., Philadelphia, Pa... 323
Western Gas Construction Co., Fort Wayne, Ind.... 336

VALVES.

Bartlett-Hayward & Co., Baltimore, Md.... 329
Davis & Farnum Mfg. Co., Waltham, Mass.... 328
Isbell-Porter Co., Newark, N. J.... 315
Kerr Murray Mfg. Co., Fort Wayne, Ind.... 331
Ludlow Valve Manufacturing Co., Troy, N. Y.... 317
R. D. Wood & Co., Philadelphia, Pa.... 334
The Gas Machinery Co., Cleveland, O.... 311
The P. H. & F. M. Roots Co., Connersville, Ind.... 319
The Stacey Mfg. Co., Cincinnati, O.... 331
Western Gas Construction Co., Fort Wayne, Ind.... 336

VERTICAL S'S.

Connelly Iron Sponge & Gov. Co. (Drake's [Eng.] System) 325
Didier-March Co., New York City.... 330
Evens & Howard Firebrick Co., St. Louis, Mo.... 263
Fred Bredel Co., Milwaukee, Wis.... 326
Gas Bench Construction Co., St. Louis, Mo.... 317
Improved Equipment Company, New York City.... 309
Laclede-Christy Clay Products Co., St. Louis, Mo.... 314
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. .. 324

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Pittsburg Meter Co., East Pittsburg, Pa.... 318

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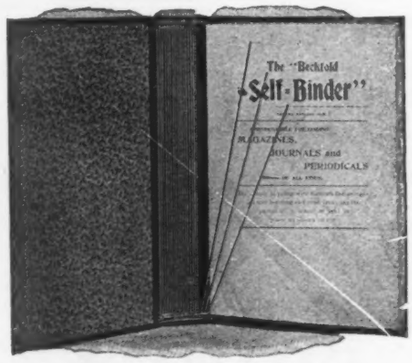

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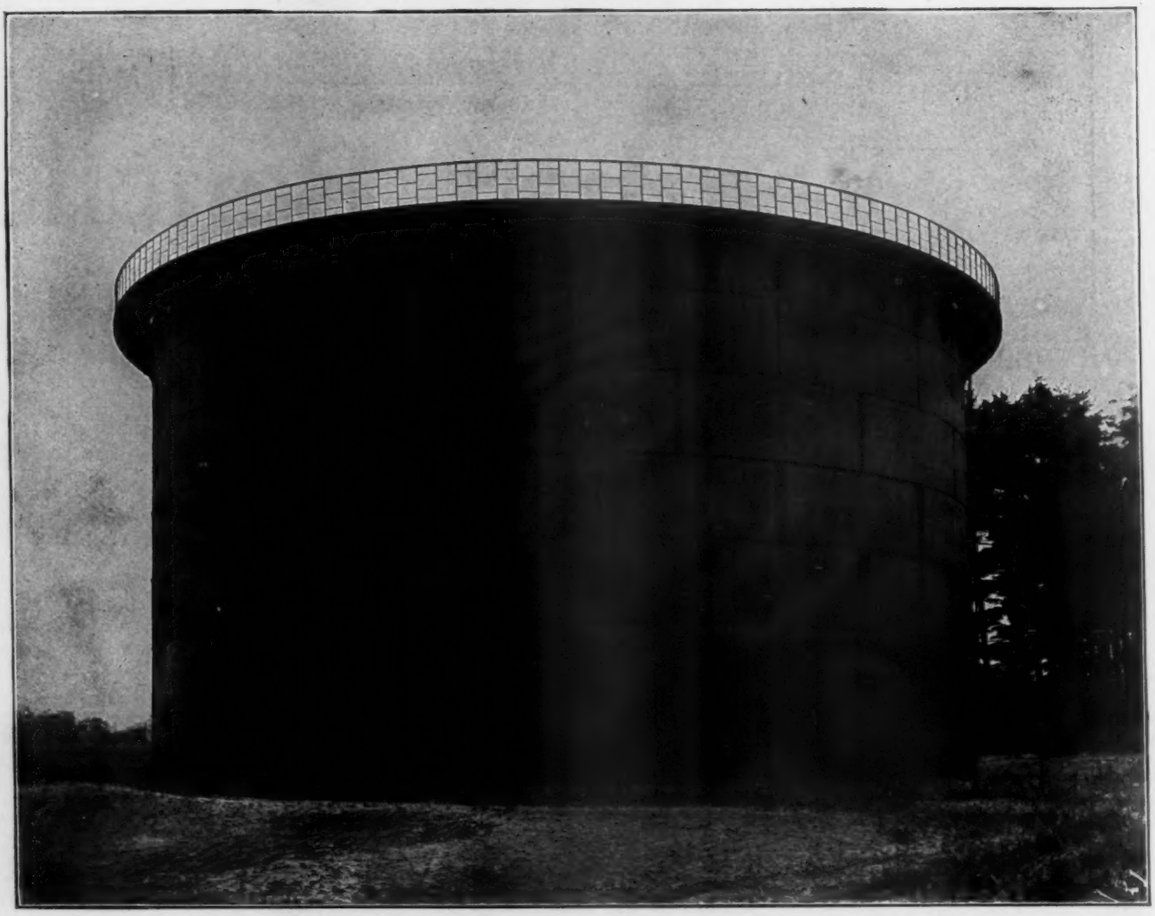

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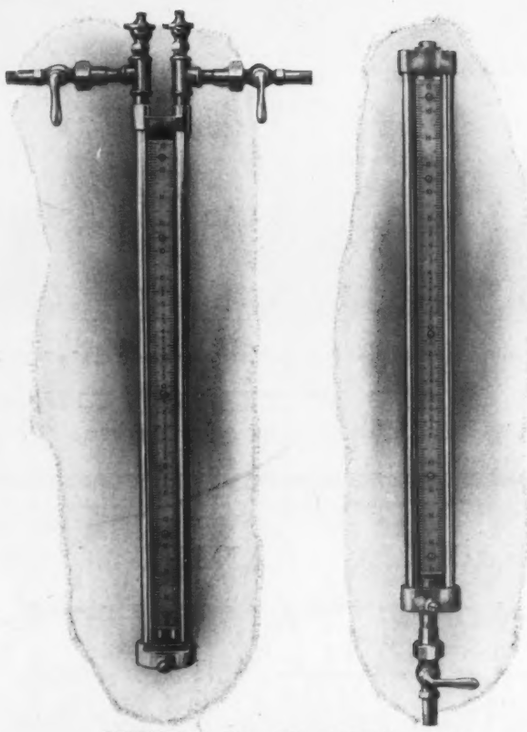

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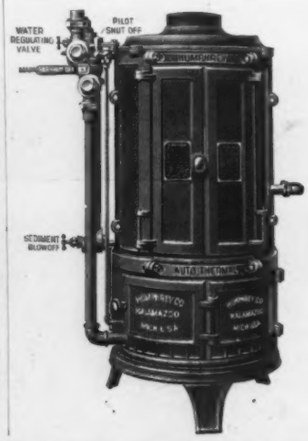

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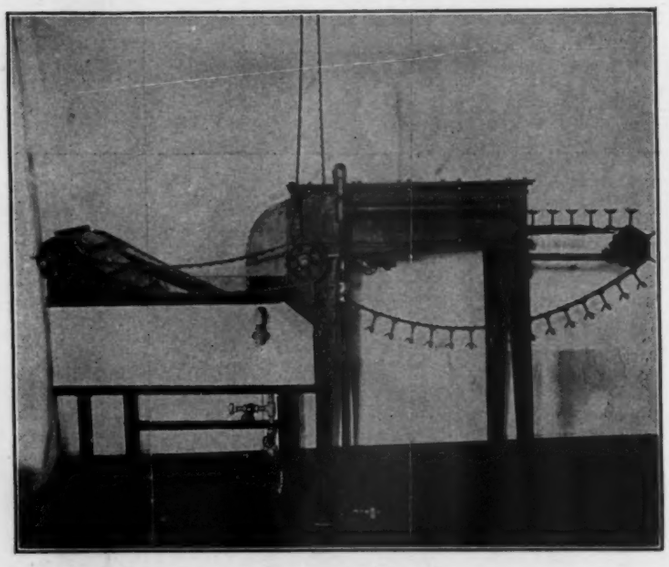

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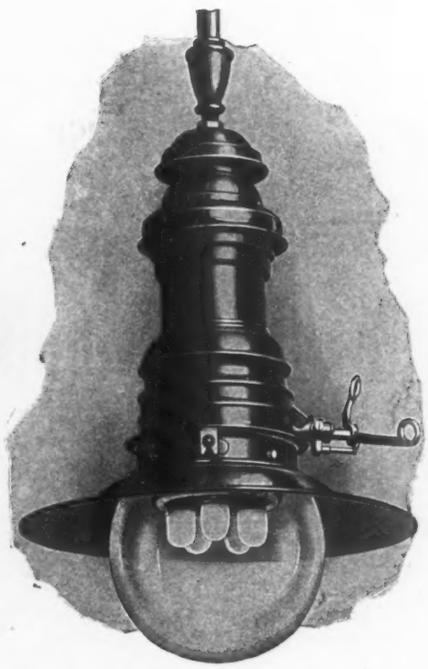

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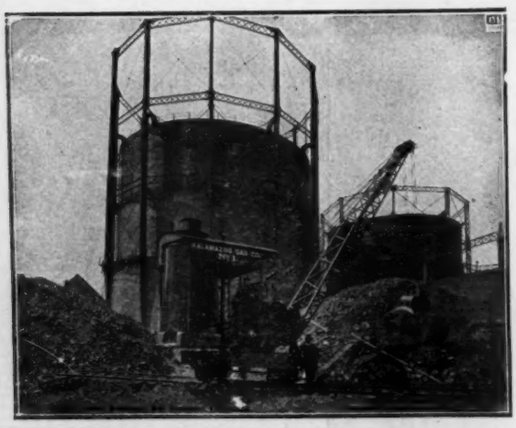

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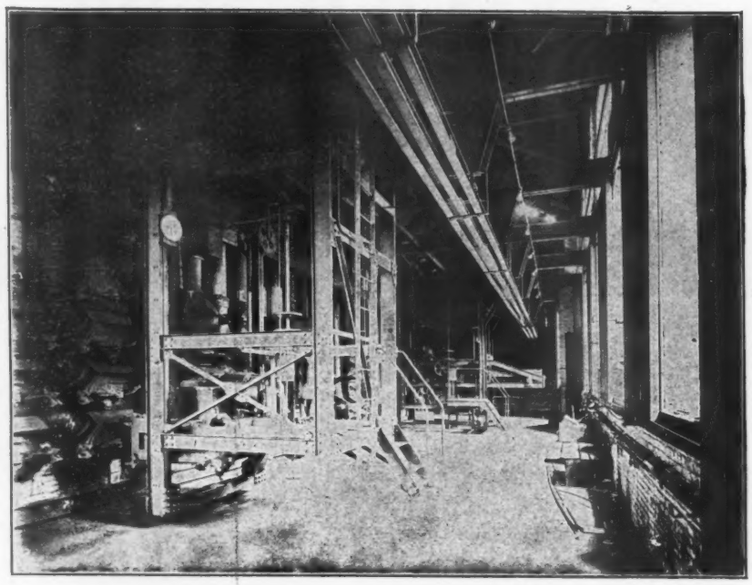

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American Gas Institute.—Annual meeting, October, 1910. New York City. Officers: President, Wm. H. Bradley, N. Y., City Secretary, A. B. Beadle, 29 West 39th street, N. Y. City.

Canadian Gas Association.—Annual meeting, June, 1911. ————————. Officers President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov., 1910. New York City. Officers: President, C. R. Huntley, Buffalo, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street, New York City.

Gulld of Gas Managers of New England.—Annual meeting, December. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, A. K. Quinn; Newport, R. I.; Secretary, Walter G. Africa, Manchester, N. H.

Illinois Gas Association.—Annual meeting, time, March, Chicago, Ills. Officers: President, A. S. Harrington, Chicago, Ill.; Secretary-Treasurer, C. B. Strohn, Elgin, Ill.

Illuminating Engineering Society.—Annual meeting, Baltimore, Md., Oct. 1911. Meetings of Sections, monthly. President, W. H. Gartley, Philadelphia, Pa.; Secretary, Preston S Millar, 29 W. 39th street, N. Y. City. Sections: New York: Secretary, Albert J. Marshall, 227 Fulton street. New England, Secretary, L. D. Gibbs 39 Boylston street, Boston, Mass. Philadelphia, Secretary, F. N. Morton, Broad and Arch streets Chicago, Secretary, T. R. Beebe, 157 Michigan avenue,

Indiana Gas Association.—Annual meeting, January 19, 1911, Fort Wayne, Ind. Officers: President, Carl H. Graf, Indianapolis; Vice-President, S. E. Mulholland; Secretary-Treasurer, Philmer Eves, Indianapolis Gas Company, Indianapolis, Ind.

Iowa District Gas Association.—Annual meeting, time, June, 1911, ————————. Officers: President, Austin Burt, Waterloo, Ia.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ———— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association.—Annual meeting, time, Sept. 9 to 12, 1910; Aboard Boat, "Georgian Bay." Officers: President, B. O. Tippy, Grand Rapids, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April 13, 14 and 15, 1911; St. Louis, Mo. Officers: President, R. J. Irvine; Secretary and Treasurer, W. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, December, 1911: Boston. Officers: President, E. N. Wrightington, Boston; Secretary, Louis Stotz, 36 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May 16, 17 and 18, 1911; Pittsburgh, Pa. Officers: President, John M. Garard, Columbus, O, Secretary, T. C. Jones, Delaware, O. Editor Wrinkle Department, F. W. Stone, Ashtabula, O.

New England Gas Association.—Annual meeting, third Wednesday in February; Boston. Officers: President, W. H. Snow, Holyoke, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

Oklahoma Public Utilities Association.—Annual meeting, May 9, 10 and 11, 1911. Officers: President, E. C. Reynolds; Secretary, Galen Crow, Guthrie, Okla.

Pacific Coast Gas Association.—Annual meeting, Sept. 20, 21 and 22, 1910, Los Angeles, Cal. Officers: President, W. B. Cline, Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 925 Franklin street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April, 1911, Reading, Pa. Officers: President, J. H. Keppelman, Reading, Pa.; Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, December, 1910; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 1123 Broadway, New York.

Southern Gas Association.—Annual meeting, Feb. 16, 1911, Montgomery, Ala Officers: President, H. W. Frund, Salisbury, N. C.; Secretary-Treasurer, Jas. Ferrier, Rome, Ga.

Southwestern Electrical and Gas Association.—Annual meeting, May, 1911, ———— Tex. Officers: President, W. B. Tuttle, San Antonio, Tex.; Secretary, H. B. Head, Stephensville, Tex.

Wisconsin Gas Association.—Annual meeting, May ————, 1911, Milwaukee, Wis. Officers: President, W. H. Winslow, Superior, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.

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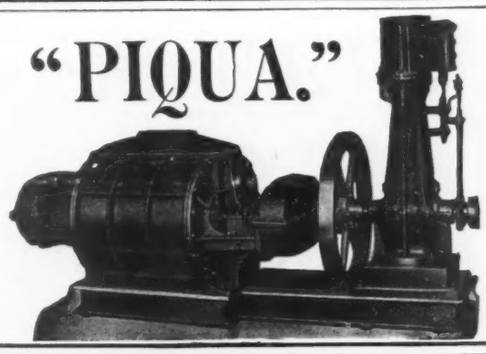

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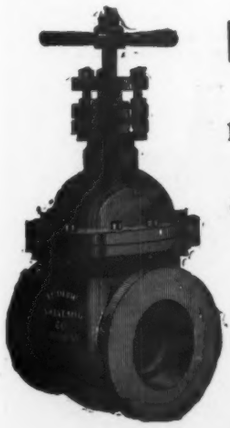

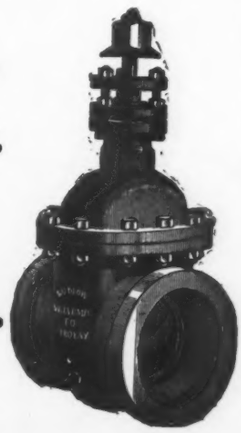

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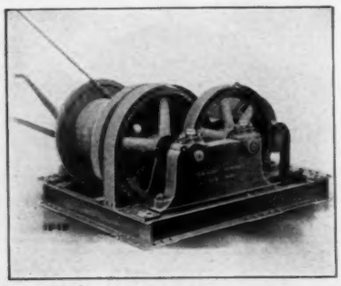

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PUBLIC LIGHTING TABLES FOR AUGUST, 1910.

[COMMUNICATED BY THE AMERICAN METER COMPANY.]

Day of Week.	Table No. 1. FOLLOWING THE MOON			Day of Week.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING.		
	Date.	Light.	Extinguish.		Date.	Complete Lighting in 1 Hour.	Complete Extinguishing in 50 Minutes.
						From Time Given.	
		P.M.				P.M.	A.M.
Mon.	1	7.40	4.00 A.M.	Mon.	1	7.02	3.27
Tue.	2	7.40	4.00	Tue.	2	7.02	3.27
Wed.	3	7.40	4.00	Wed.	3	7.02	3.27
Thu.	4	7.40 N.M.	4.00	Thu.	4	7.02	3.27
Fri.	5	7.40	4.00	Fri.	5	7.02	3.27
Sat.	6	7.40	4.00	Sat.	6	6.57	3.37
Sun.	7	7.40	4.10	Sun.	7	6.57	3.37
Mon.	8	7.40	4.10	Mon.	8	6.57	3.37
Tue.	9	7.40	4.10	Tue.	9	6.57	3.37
Wed.	10	8.00	4.10	Wed.	10	6.57	3.37
Thu.	11	9.20	4.10	Thu.	11	6.57	3.37
Fri.	12	9.50 F.Q.	4.10	Fri.	12	6.57	3.37
Sat.	13	9.20	4.10	Sat.	13	6.47	3.47
Sun.	14	10.50	4.10	Sun.	14	6.47	3.47
Mon.	15	10.30 A.M.	4.10	Mon.	15	6.47	3.47
Tue.	16	12.30	4.10	Tue.	16	6.47	3.47
Wed.	17	1.30	4.10	Wed.	17	6.47	3.47
Thu.	18	2.30	4.10	Thu.	18	6.47	3.47
Fri.	19	No L.	No L.	Fri.	19	6.47	3.47
Sat.	20	No L. F.M.	No L.	Sat.	20	6.37	3.52
Sun.	21	No L.	No L.	Sun.	21	6.37	3.52
Mon.	22	7.20 P.M.	9.10 P.M.	Mon.	22	6.37	3.52
Tue.	23	7.20	9.40	Tue.	23	6.37	3.52
Wed.	24	7.20	10.10	Wed.	24	6.37	3.52
Thu.	25	7.20	10.30	Thu.	25	6.37	3.52
Fri.	26	7.20	11.10	Fri.	26	6.37	3.52
Sat.	27	7.20 L.Q.	11.50	Sat.	27	6.27	3.57
Sun.	28	7.10	12.40 A.M.	Sun.	28	6.27	3.57
Mon.	29	7.10	1.30	Mon.	29	6.27	3.57
Tue.	30	7.10	2.40	Tue.	30	6.27	3.57
Wed.	31	7.10	4.30	Wed.	31	6.27	3.57

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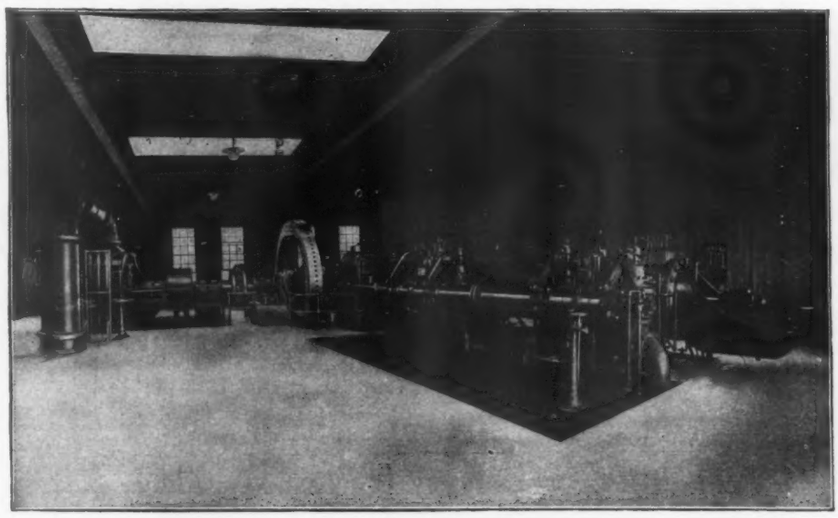

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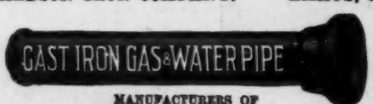

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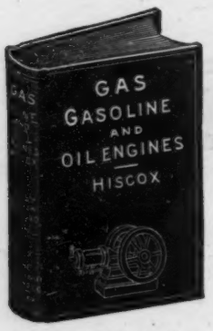

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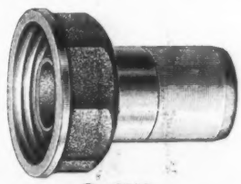
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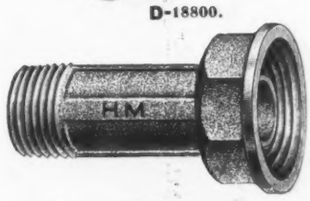

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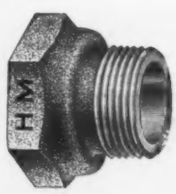

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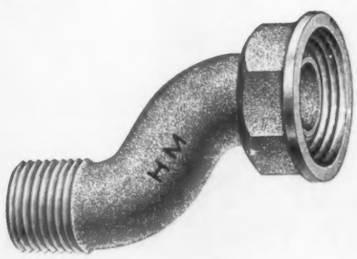

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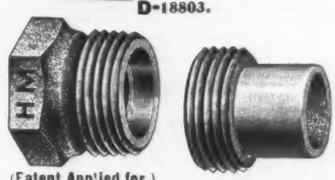

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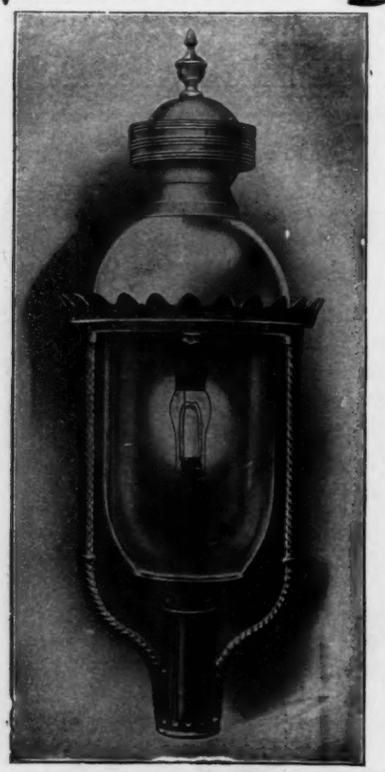

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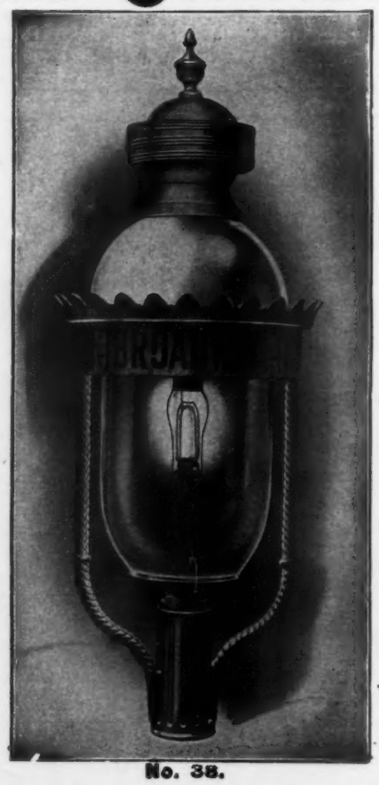

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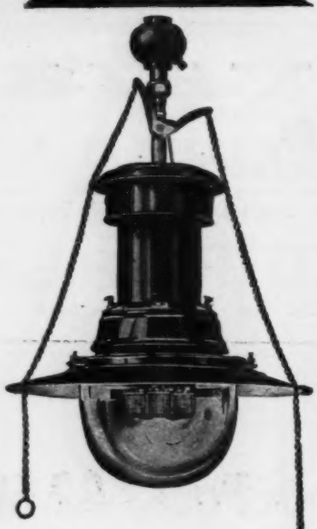

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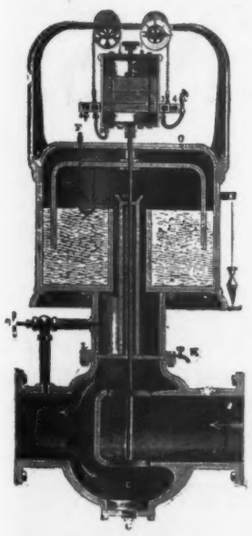

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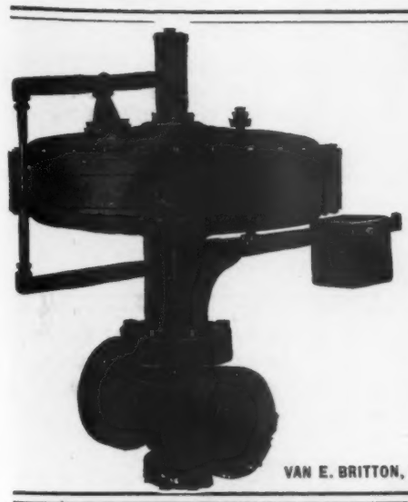

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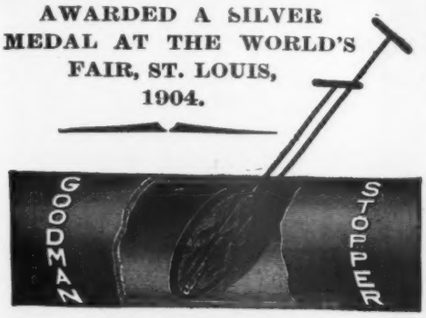

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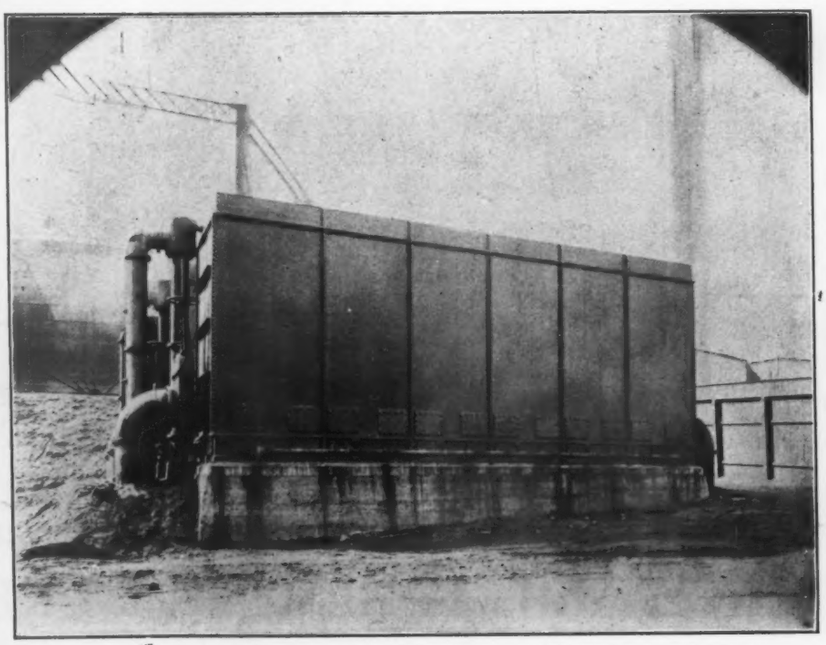

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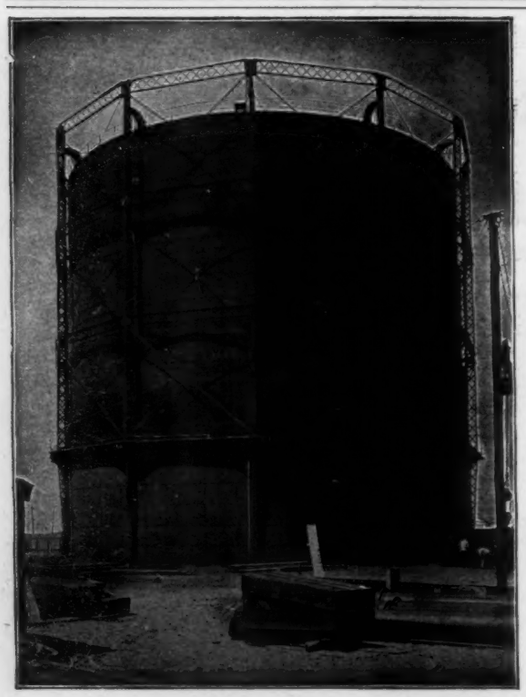

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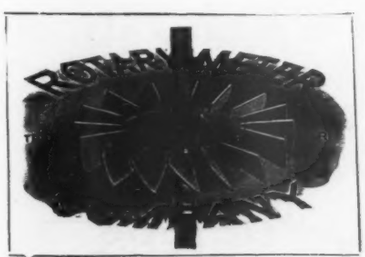

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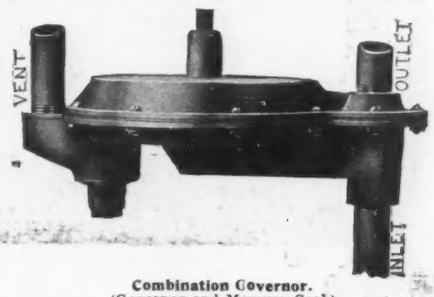

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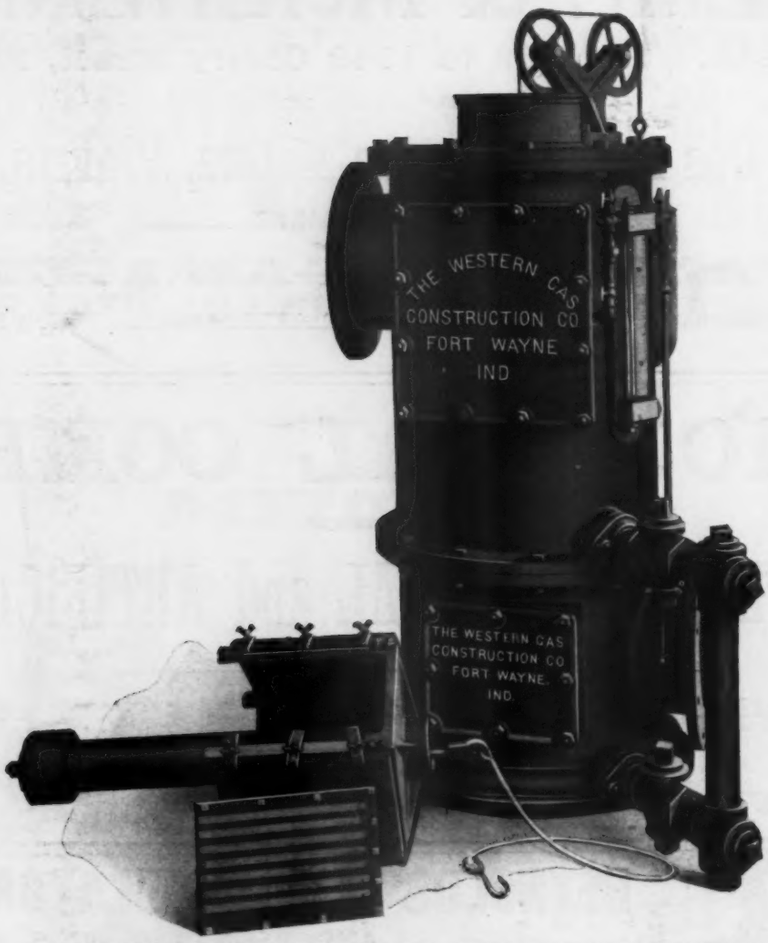

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